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THE

MODERN PRACTICE OF PHYSIC:

EXHIBITING THE

SYMPTOMS, CAUSES, PROGNOSTICS, MORBID APPEARANCES,
AND TREATMENT

OF

THE DISEASES OF ALL CLIMATES.

BY ROBERT THOMAS, M.D.

ELEVENTH EDITION,
THOROUGHLY REVISED, CORRECTED, AND TO A CONSIDERABLE EXTENT RE-WRITTEN,

BY

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IN TWO VOLUMES.

VOL. I.

LONDON:
LONGMAN, BROWN, AND CO.; SIMPKIN, MARSHALL, AND CO.; WHITTAKER AND CO.; HAMILTON AND CO.; S. HIGHLEY AND SON; J. CHURCHILL; T. BUMPUS; H. G. BOHN; R. MACKIE; D. BOGUE; C. DOLMAN; J. S. HODSON; ROUTLEDGE AND CO. EDINBURGH: A. AND C. BLACK. DUBLIN: HODGES AND SMITH. LIVERPOOL: G. AND J. ROBINSON.

1853.

ROYAL COLLEGE OF PHYSICIANS
CLASS 616(05)"18"
ACCN. 25230
SOURCE
DATE

London:
Spottiswoodes and Shaw.
New-street-Square.

PREFACE.

The nature and objects of Thomas's Practice of Physic have long been well known to both the Profession and to the public; and its utility has been fully established by the number of editions it has gone through, in England and the United States of America, and by its translation into the French language. The fact of the publication, in this country alone, of ten large editions, and the repeated and continued demands made for a new edition, furnish the most convincing evidence of the popularity of this well-known work.

The publication of the tenth edition took place during the life-time of Dr. Thomas, then in the eighty-second year of his age; but the subsequent death of the venerable author compelled the proprietors to entrust the preparation of a new edition to other hands. Accordingly, in 1846, they entered into an arrangement with the late Dr. Algernon Frampton, Physician to the London Hospital, for the preparation of a new and thoroughly revised edition of this work. The University honours which Dr. Frampton had obtained, the high opinion entertained by his professional friends of his intellectual capacity, and the wide field for the acquirement of a practical knowledge of medicine which he for many years had possessed, pointed him out to the proprietors of Thomas's Modern Practice of Physic as a most fit and proper person to prepare a new edition of this work. He was educated at a public school (viz. at Harrow), and afterwards at Cambridge, where he took the degree of 12th

Wrangler in 1825, subsequently to which time he devoted himself to medical studies and pursuits. These were carried on exclusively in London, and principally at the London Hospital, where he was first a pupil, then became an Assistant Physician in 1832, and one of the Physicians in 1844, which appointment he held until within a few months of his death in December, 1851. For some years he lectured at the hospital on Toxicology. He also held, for a period of eight years and a half, the appointment of Physician to the London Dispensary. His medical degrees were taken at Cambridge, and in 1834 he became a Fellow of the Royal College of Physicians, of which body he acted as one of the Censors for two years.

In entering upon his editorial duties Dr. Frampton observed, in a letter to one of the publishers, — "As regards the manner or plan upon which the work of renovation should be conducted, my mind is not at present made up in every particular, and I shall be happy to receive hints and suggestions from yourself or others on this subject: as, however, it would be my object to be concise as well as clear in what I might write, I contemplate reducing rather than enlarging the bulk of the volume as compared with its present size. As regards the individual articles, I contemplate exercising an absolute discretion in erasing, altering, or adding whatever may seem desirable; but, as regards the arrangement of the several articles, it seems to me very desirable to identify it with Dr. Thomas's own edition, as far as that can be done, by preserving his classification unchanged."

Unfortunately for his friends and the public, before the completion of the new edition Dr. Frampton was seized with a mortal malady, which for some months before his death interrupted the progress of the work. At the time of his decease the whole of the first volume was either printed off or in the hands of the printer, and a considerable portion of the second volume was ready for the press. The manuscript copy, however, had not been continuously prepared; but consisted of articles belonging to different parts of the volume.

Under these circumstances, arrangements were made with some of his professional friends and acquaintances (all of them, with one exception, connected with the London Hospital) for the completion of the work. Dr. Herbert Davies, Assistant Physician to the London Hospital, and author of a work "On the Physical Diagnosis of the Diseases of the Lungs and Heart," undertook to revise the articles relating to diseases of the Chest, namely, "Phthisis," "Emphysema," and "Hydrothorax," as well as to correct the articles "Anasarca," "Jaundice," "Headach," "Toothach," "Tic Douloureux," "Gastrodynia," "Herpes," "Tinea Capitis," "Psora," "Impetigo," and "Acne."

Dr. Parker, Assistant Physician to the London Hospital, who has for some years past directed his especial attention to mental diseases, kindly undertook to write the article "Insanity."

Mr. Critchett, the Senior Assistant Surgeon to the London Hospital, Surgeon to the Royal London Ophthalmic Hospital, and author of "Lectures on the Causes and Treatment of Ulcers of the Lower Extremity," prepared the articles entitled "Ulcer," "Scalds and Burns," "Suspended Animation," "Anæsthesia from Chloroform and Æther," and "Frost Bite."

Mr. Wordsworth, Assistant Surgeon to the London Hospital, and to the Royal London Ophthalmic Hospital, prepared the articles on "Hydrocele," "Hydatids," "Diseases of the Senses" ("Nyctalopia," "Amaurosis," and "Deafness"), "Squinting," "Eneuresis," "Spermatorrhœa," "Ischuria," "Dysuria," "Cancer," "Fungus Hæmatodes," "Guinea Worm," "Elephantiasis," "Lepra," "Sprain," and "Calculus."

Dr. Henry Powell (M.D. Edinb.), an experienced obstetric physician, undertook the preparation and revision of the articles relating to the diseases of women, viz. "Leucorrhœa," "Amenorrhœa," "Chlorosis," and "Menorrhagia," as well as the "Diseases of the Pregnant and Puerperal States."

Lastly, the article "Poisons," which Dr. Frampton had left in an unfinished state, was completed by Dr. Letheby, Lecturer on Chemistry and Toxicology in the London Hospital Medical School. Dr. Letheby's contribution commences with "Mercury and its compounds," and terminates the article on Poisons.

In conclusion, the proprietors beg to express their confident belief that the present edition will be found greatly superior to the preceding ones; and that the work, in its now very improved state, will continue to merit the approbation of the different members of the Medical Profession, whilst it may also prove a proper and safe guide to the clergy, and other heads of families, residing in situations where medical advice cannot promptly be obtained on the sudden attack of severe disease.

London, January, 1853.

A TABLE

OF

THE WEIGHTS AND MEASURES

USED BY APOTHECARIES.

Troy or Apothecaries' Weight.

		Contains
The Pound	℔	Twelve Ounces.
— Ounce	℥	Eight Drachms
— Drachm	ʒ	Three Scruples.
— Scruple	℈	Twenty Grains.
— Grain	gr.	

Imperial Measure of Fluids.

		Contains
The Gallon	Cong.	Eight Pints.
— Pint (Octarius)	O.	Twenty Fluid-ounces.
— Fluid-ounce	f℥	Eight Fluid-drachms.
— Fluid-drachm	fʒ	Sixty Minims.
— Minim	♏	

The *Wine measure* of fluids, formerly used in the Pharmaeopœia, differs from the imperial measure in the circumstance, that the wine pint contains only sixteen fluid-ounces.

On account of the uncertainty of the dose of any medicine of a liquid nature, when regulated by the dropping of it from a bottle (much depending on the size of the phial, as likewise on the quality of the fluid contained in it), the minim is to be substituted for the drop. The minim and drop (or gutta) of any aqueous fluid proceeding from the mouth of the graduated measure, may be considered, indeed, as nearly equal; but with respect to vinous and spirituous tinctures, there will be a considerable difference, as ten minims of either of these will at least amount to fifteen or sixteen drops. In administering active medicines, such, for instance, as the tinctura opii and the like, the difference between the minim and gutta is of high importance, and should be attended to.

The following explanation of popular measures deserves to be known :—

A tumbler (*cyathus magnus*)	Is usually considered to be equal to	Eight Fluid-ounces.
A wine-glass (*cyathus vinarius*)		Two Fluid-ounces.
A cup (*poculum*)		Six Fluid-ounces.
A table-spoonful (*cochleare magnum*)		Half a Fluid-ounce, or Four Fluid-drachms.
A dessert-spoonful (*cochleare medium*)		Two Fluid-drachms.
A tea-spoonful (*cochleare minimum*)		One Fluid-drachm.

In this, as well as in all the former editions, it has been judged necessary to state, that the doses of the medicines in the various prescriptions are calculated for adults, unless where particularly specified for the use of children, and likewise that in general women require a smaller quantity of any active drug than men, and persons of a sanguineous temperament less than those of a melancholic tendency. In regulating the doses, due attention ought therefore to be paid, not only to the nature of the existing disease, and any peculiarity or idiosyncrasy of constitution, but likewise to the age and sex of the patient.

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PRACTICE OF PHYSIC.

CLASS I.

PYREXIÆ, OR FEBRILE DISEASES.

The character assigned to this class of diseases is, increased heat and frequency of the pulse, after shivering, accompanied with disturbance of many functions, and diminution of strength, especially in the limbs.

It is important to note that the assemblage of symptoms here described is not distinctive of any particular order of diseases, but common to a whole class, including several orders ; and that pyrexia alone often precedes the appearance of the distinctive symptoms with which it is subsequently associated. Hence the determination of the nature of the disease thus seen at its outset, must remain for a time matter of conjecture and of doubt. The force of these observations becomes more apparent by a reference to Dr. R. Williams' statements on the subject of the diagnosis of continued fever. "The diagnosis of the first stage of typhus fever cannot," writes this author, "be determined during the few first days of the attack. The fever (pyrexia) that precedes the eruption of small-pox, measles, and other eruptive disorders, in no respect differs from the first stage of typhus. There are many slighter diseases, arising from the action of more ephemeral poisons, as a common cold, or else from some local irritation of the intestinal canal or other part, which for a few hours may simulate the first stage of typhus. In forming a diagnosis in typhus, the ordinary remedies must be tried, and the period which usually precedes eruptive diseases be allowed to elapse, before we can determine its existence."*

We think it not out of place here, at the outset of our work, to insist upon facts which make it evident that disease is often not to be recognised by the aspect that it presents at one time, but must be studied in its successive phases. We have just shown the necessity of waiting for the phenomena to be subsequently manifested in the course of a febrile disease when we see it at its commencement, and a like necessity of acquiring a knowledge of its previous history exists when we see it only in an advanced stage. The author already quoted furnishes proof of this assertion also. "The phenomena of the second and third stage of typhus are simulated by many local diseases, as abscess of the liver, a sloughing sore, gangrene even of a small portion of cellular tissue; in fact, most diseases terminate more or less with symptoms of the last stage of typhus. So that when the tongue is brown, the previous history of the disease must always be inquired into before we can affirm with certainty that the existing disease is typhus." The truth is, that the nature and affinities of disease can be learned, not alone from a single aspect during life, nor alone from inspection after death; not alone from a catalogue of individual symptoms, or combinations of symptoms, but from the order of their sequence also; the whole of these necessary particulars at once deriving explanation from, and shedding light upon, the results of necroscopic examination.

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* Morbid Poisons, i. 65, 66.

We have said above that pyrexia often precedes the characteristic symptoms of disease which at a later period are superadded to it; but in not a few mild cases the whole ailment consists in temporary pyrexia gradually subsiding and succeeded by a return of health. How then are such maladies to be distinguished or classified? We believe that in many instances their real nature can only be matter of conjecture; that they are, in truth, instances of incomplete or abortive diseases, belonging it may be to any of the three first orders of the class Pyrexiæ, and to almost any of their several genera. They may be examples of imperfectly developed fevers, either eruptive or otherwise, or of slight inflammations passing off by speedy resolution. We have heard on good authority of one case of small-pox marked by only two pustules on the face, the nature of which might have been uncertain but for the communication to another individual of the disease in a most virulent and fatal form; and when scarlet fever prevails in a family, some of its members may present so slight an indisposition, that it may be doubtful whether they have or have not been affected by it.

Again, Dr. Watson well remarks, that many sporadic cases occur of febrile disorder which do not belong to the category of continued fevers, and yet are liable to be confounded with them, since all the phlegmasiæ are attended with pyrexia, and the local inflammation may be slight, or very obscurely marked and easily overlooked; but the febrile symptoms are much the same as those which constitute the more inflammatory forms of continued fever.† Dr. Southwood Smith writes, that the aggregate phenomena constituting the synocha of Cullen, namely, great increase of heat, a frequent, strong, and hard pulse, red urine, with little disturbance of the sensorial functions, form just that particular series which is common to some forms of fever and to all acute inflammations;

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* Morbid Poisons, i. 66.

† Lectures, 1848. ii. 756.

and that the train of symptoms thus brought together do not alone form any variety of fever.*

We have said thus much in order to enforce a precaution against a diagnosis premature in time, or founded on insufficient data in the case of febrile diseases, in which it is more especially likely to take place. We agree with Dr. S. Smith when he says, that symptomatic fevers are not fevers at all, and we regret, and shall endeavour to avoid, the confusion that arises from the use of the term fever sometimes as expressive of the febrile state (pyrexia), and sometimes of a peculiar class of diseases.

To define fevers as diseases independent of any primary local affection, and to speak of symptomatic fevers, is nothing else than to admit a direct contradiction in terms. While again, if independence of primary local disease be not the peculiar character of fevers properly so called, then the epithet symptomatic, equally applicable to all, ceases at once to be distinctive.

ORDER I.

FEBRES, OR FEVERS.

Cullen's definition is the following: — Pyrexia, or a febrile condition succeeding to languor, lassitude, and other signs of weakness, and independent of any primary local disease. We shall not now stop to inquire whether this description be absolutely correct in all its parts. That in the majority of instances fevers are preceded by chills, by an inaptitude for exertion either of body or mind, and by other symptoms of depression in a very marked and peculiar degree, does not admit of doubt. The question of their independence of local disease is still a point at issue, to be more fully discussed hereafter. It is enough, for the present, to adduce it as a part of the aspect, if not of the reality, of fevers, that they do not, during life, present us with the same or similar indications of injury to particular organs, that we meet with in their ordinary acknowledged inflammations. The headache of uncomplicated fever is wont to be less defined in its seat, less continued in its duration, less sharp and severe in its character, than that which accompanies inflammation within the head. There is often a giddiness rather than a headache in the former disease, felt more in the erect than in the recumbent posture; and there is a dulness in the half-closed eyes, and a listlessness and torpor expressed in the countenance and in every movement, strongly contrasting with the lively look and ready manner of the sufferer from acute inflammatory disease of the brain or its membranes. The delirium of the first always indicates somewhat of that character which in extreme cases is so well designated by the term muttering; that of the latter displays more activity and violence.

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* Treatise on Fever, p. 62.

The cough, the difficulty of breathing, and the pains about the chest, which may accompany fever, rarely or never reach the intensity of those of primary bronchitis, of pneumonia, or of pleuritis. The intestinal affections have none of the prominence of diarrhœa, or dysentery, or peritonitis. In appearance at least, if not in fact, there is more of debility in continued fever than in any of the order of phlegmasiæ; in appearance also, if not in fact, it is at its outset, and may be throughout its course, a disorder of the whole system rather than of any individual part; and it possesses both of these qualities in a striking degree as far as the feelings of the patient are concerned, who, if he consult his medical attendant when labouring under recent and severe inflammatory disease, will seldom fail to describe, of his own accord, symptoms of pain, or disturbed function, which shall at once make known the particular organ or part primarily affected; while, if he be the subject of fever, he will complain most of chilliness and feebleness, of thirst, of loss of appetite, and it may be of undefined pains in the head or elsewhere, while he will declare himself at a loss to point out any special malady which may account for his general indisposition. Be fever what it may in its essence, these constitute some of its external features, and serve to assist in its recognition, though they afford us no guidance as to the principles of its treatment. "A fever," says Dr. Fordyce, "is a disease which affects the whole system; it affects the head, the trunk of the body, the extremities; it affects the circulation, the absorption, and nervous system; it affects the skin, muscular fibres, the membranes; it affects the body, and affects likewise the mind. It is therefore a disease of the whole system in every kind of sense, but it does not affect the various parts of the body uniformly and equally."

It is a general fact with regard to diseases, that they consist of, and are recognised by, the combination and succession of symptoms rather than by any one which can be set down as distinctive or pathognomonic. In fevers there is no such single distinctive symptom, and it may farther be stated that there is none so necessary or essential as to be invariably present. Great diversity obtains in the symptoms, not only of the different genera and species of fevers, but also in the successive stages of those of the same form.

The general idea of fever includes a period of depression at the outset, succeeded by a period of excitement, which in its turn is followed by one of subsidence; wherein excessive actions decline so as to give place to a healthful calm, or are exchanged for symptoms of exhaustion to be followed by death. The disease in some instances is paroxysmal, and presents a frequent and long-continued repetition of this succession of phenomena, viz. of depression, of excitement, and of subsidence, each recurrence being separated from its predecessor by a state more or less nearly approaching to that of health; while in other cases it is made up of these several stages (one or all of them of much longer duration than in the preceding form), occurring only once throughout its course. Any one of these stages of depression, of excitement, and of subsidence, may in different varieties of the disease be either so diminished in intensity, or so shortened in continuance, as to be hardly recognisable in practice.

If we turn to individual functions, we shall find that in common continued fever some of these undergo great derangement, the organs of circulation being especially affected. The pulse is almost always quick, and almost always feeble, and generally exhibits these qualities in combination; yet in some cases it is slow or natural in frequency, and soft and feeble, perhaps intermitting in character. Or again, it may unite considerable strength with frequency, especially where some local inflammation coexists with fever; but it is rarely hard, and never hard and slow.

The functions of the stomach and bowels are almost always disturbed; irritability may or may not be present, but thirst and loss of appetite and vitiated alvine secretions form nearly constant symptoms; the tongue too is foul, and the sense of taste impaired.

As regards the condition of the skin, we have, during the stage of depression, pallor and coldness, and the contracted state constituting cutis anserina; and then again, in that of excitement, we have heat and dryness, the former such as to give a sense of pungency to the hand of the attendant when applied to it; and in the last stage we have either a return to the soft, and cool, and moist condition of health, or a degree of relaxation giving rise to profuse perspiration.

Disturbance of the cerebral functions is observed in fevers to a greater extent than in acknowledged inflammations. A state of hebetude or dulness of the faculties is often conspicuous; sleep is often wanting, or, when obtained, is uneasy and unrefreshing. Delirium is a frequent attendant upon the disease in all but its intermittent form; and muscular power is remarkably impaired even from the commencement, before that wasting of the frame has begun which is so noticeable in the progress of continued fever.

Of all fevers it may be said that they are less uniformly continuous or less equable in their course than other acute diseases; in some cases, consisting altogether of the repetition of distinct paroxysms, and even in the most uniform presenting more decided fluctuations than are observed to occur, independently of the influence of treatment, in the progress of the acknowledged inflammations. Again, although their duration is very various, they have a greater tendency than these last to observe some law in respect of their continuance. The prostration of muscular power is in almost all severe cases of continued fever a remarkable phenomenon; we have seen patients labouring under cholera, without pulse at the wrist, and within an hour of death, make exertions of which the fever patient, though not in a hopeless state, would during many days be utterly incapable. The debility in acute inflammatory diseases is scarcely so marked even just before the close.

If the countenance indicate distress, it is that of exhaustion, not of pain or breathlessness. The unsteady gait, the tottering limbs, and tremulous tongue, mark the debility which attends the very commencement, subsultus tendinum evince this extreme condition near its close; there is a hebetude in the senses, a sluggishness in the delirium, a feebleness in the midst of excitement. In other diseases there is pain, or disquietude, or uneasiness residing in a part and affecting the whole system, or there may be the hinderance of the function of some organ affecting the rest in accordance with known laws of pathology; but in the worst forms of fever there seems to be helplessness throughout every part and function of the system, without pain or apparent hinderance anywhere.

Without the harassing influences of severe pain, without excessive discharges of any kind, without positive and manifest impediment to the performance of any individual function, there is an exhaustion of all power (be its source what it may), and there is a wasting of the frame such as is observed in no other acute diseases unless it be in the nearly allied order of the exanthemata. While to the exanthemata most conspicuously the property of spreading by infection belongs, this power has also been attributed to some fevers; but as a general rule, with few if any exceptions, it is not even suspected to exist in the phlegmasiæ.

In confirmation of what has been advanced, we borrow from Dr. W. P. Alison an abbreviated sketch of the diagnostic symptoms of what he terms idiopathic fevers.

"I. There is the *negative* fact, that in many of the cases to which this name is given, the general febrile symptoms are unattended during great part or the whole of their progress by any such local symptoms, — such fixed and permanent local uneasy feeling, — or such peculiar change of the sensible qualities, — derangement of the functions of any one part of the body, as justifies the belief that any individual organ is inflamed.

"II. Besides this negative observation, which applies only to a part of the cases thus named, there is the positive observation, applicable probably to all cases of idiopathic fever, although much more applicable to some than others, that typhoid symptoms show themselves in one or other, but probably in several of the following ways: —

"1. In the state of the circulation, the pulse having very generally from the commencement, or early in the disease, less strength or resistance to compression, than in the fever which usually accompanies simple and decided inflammation, at the same period after the attack.

"2. In the state of the secretions, which are more deranged, and generally more diminished than in inflammatory fever; as is sufficiently obvious in the fur on the tongue, and the secretions of the mouth becoming viscid, dry, and dark coloured, and in the more complete failure of appetite.

"3. In the state of the nervous system, the greater tendency to stupor, or confusion of thought, generally to be detected even in the commencement, and very obvious in most cases throughout the greater part of the disease, often showing itself unequivocally in the later stages by the involuntary voiding of the excretions which are naturally under the restraint of the will; the greater weakness, vertigo, and faintness on attempting exertion, in the early part of the disease, attended generally with much tenderness of surface and general soreness; the frequent tremors and subsultus tendinum, even when no exertion is made; the greater derangement of the external senses, particularly of that of hearing; the greater tendency to delirium as the disease advances, and the usually peculiar character of that delirium, which extends to all the trains of thought in the mind, is unattended with propensity to violence, and is more or less blended with, or graduates into stupor, and hence is generally designated by the epithets low, muttering.

"4. In the state of the blood, which is probably always so far altered in its vital properties, in idiopathic fever, as to coagulate less firmly than usual, and in some cases loses the power of coagulation altogether; in connection with which state we frequently observe more or less of the symptoms formerly called those of putrescency in fever, petechiæ or vibices, passive hæmorrhages and gangrene from slight irritation."

Dr. Southwood Smith has placed the essential phenomena of fevers generally, not so much in any peculiarity in the symptoms as in the particular order of their succession. Thus he says of fever, that it is not an entity but a series of events: and that the events which invariably concur in fever are a certain deviation from the healthy state in the nervous and sensorial functions, a certain deviation from the healthy state in the circulating function, a certain deviation from the healthy state in the functions of secretion and excretion; and that there must be a deviation in all these three circles of functions before fever can exist. But farther, he conceives that the invariable concurrence of a particular number of events is not alone sufficient to constitute fever, that there must be also invariable concurrence in a particular order; that derangement in the nervous and sensorial functions must be the invariable antecedent, derangement in the circulating function the invariable sequent, derangement in the secreting and excreting functions the last result, in the succession of morbid changes. He states it, moreover, as a clear and universally applicable mark of distinction between fever and inflammation, that though in the latter some of the phenomena are the same, yet that the order in which they occur is not the same; that there is similar derangement in the secreting and excreting functions, that there is sometimes also similar derangement in the circulating function, but that the derangement in the nervous and sensorial functions is seldom if ever similar; while the derangement that does take place in these latter functions, is apparently different in kind, and is certainly and invariably different in the order of its occurrence.*

Such, then, according to this author, are some of the grounds of distinction between fevers and inflammations; and we have the rather adduced them on account of their general bearing upon the intrinsic diversity of two orders of diseases, which by many pathologists have been regarded as almost, if not altogether, identical. But the word fever in its most restricted application, includes several diseases differing very widely from one another. Thus, if we view fevers with reference to their causes, we shall find that they arrange themselves into at least two, and perhaps into more great divisions; which, although presenting many phenomena in common, have characters so distinct, and observe laws so opposite, as to make it almost doubtful whether they are properly brought together under a common name.

Regular intermittent fevers on the one hand, and contagious continued fevers on the other, present indeed aspects so different, that the distinctness of their natures and origins would be little likely to be lost sight of, were it not for the existence of intermediate forms connecting them so continuously as to leave no break or point of natural separation between these two extremes. Nothing can be more dissimilar than a quartan ague and a continued fever; yet the tertian and quotidian, clearly congeners of the former, have an increasing resemblance to the latter. The remittent comes still nearer, while its true affinities may be marked by its still preserving a somewhat paroxysmal character throughout its course, and commencing or terminating as a regular intermittent. But other cases of fever, judged to be malarious on account of the localities, the times, and circumstances of their occurrence, as well as of the more marked examples of malarious fever which form a part of the epidemic during which they appear, independently of all such extraneous considerations as these, are little distinguishable from synochus or typhus. On this subject Dr. Macculloch asserts, "that even among the most accurate and able observers we find ample histories of remittent fever, more properly, therefore, called marsh fever, where it has been perfectly continuous, at least as much so as typhus fever ever is, while in such cases the additional presence of petechiæ, and other associated appearances, renders it utterly undistinguishable."† Dr. Stratton, again, in speaking of the malarial continued fevers of Canada, says, "that the degree of their intensity ranges by insensible gradation from that of mild, common, continued fever, to that of typhus gravior."‡ Dr. Wood notices the variety of miasmatic fever, usually called remittent, and common continued fever, as two distinct fevers endemic in the United States, and says that they often bear no inconsiderable resemblance to each other, yet require in some respects very different treatment;

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* Treatise on Fever, pp. 46, 47. 49, 50. † Essay on Remittent Fevers, i. 26.

‡ Edinburgh Med. and Surg. Journal, lxiv. p. 106.

so that whereas they are not unfrequently confounded by practitioners, it is of great importance that they should be distinguished.* Dr. Geddes, again, in his "Clinical Observations of the Diseases of India," says, of remittent fevers, that in certain instances the symptoms put on a typhoid appearance, and in some the disease assumed the chief features of a continued fever, but that in neither case was there any cause to believe in the presence of infection; and he had declared just before that continued fever in its form of a contagious disease, as usually seen in Great Britain, had not been met with in the course of the author's experience in the East. So that we have here, too, the recognition of a form of fever resembling, yet distinct from, the more ordinary continued fever known as synochus or typhus.† Now there is nothing new in the observation that marsh or malarious fever not unfrequently assumes the form of synochus or typhus both in hot and temperate climates. The circumstance to be noted is the distinctness of their natures, notwithstanding the similarity of their appearance. And this point is so far from having been prominently insisted upon, that by many it has not been admitted, or even has been denied. Thus Dr. R. Williams observes, "that the doctrine of contagion, in regard to paludal fevers, has been supported by some nosologists on the ground that typhus and paludal fevers are merely different species of one common genus;" and he proceeds to enunciate the distinct laws which regulate them in disproof of this view.‡

Others, on the contrary, starting from the same assumption of their identity, have arrived at the opposite conclusion, that typhus is non-contagious because paludal fevers are not so. Dr. Chambers appears to have held this opinion in his Lectures, published in the second vol. of the "London Medical Gazette" in 1828, when he expressed it as his belief, and that of the majority of well-informed medical men of the day, that the ordinary continued fever was non-contagious. Now we dissent from both these opinions, and conceive that we express the present prevalent belief as well as our own, when we declare paludal or malarious fevers to be under all circumstances devoid of the property of spreading by contagion, while synochus or typhus are possessed of that property, and that the two diseases are inconvertible, and under all circumstances as distinct as are their respective specific exciting causes. In support of this opinion we adduce the contrasted laws which regulate their appearance and course, as well as those of a third form of fever distinct from both, of the true nature of which, however, we must speak more doubtingly.

Paroxysmal fevers, whether intermittent or remittent, have as their universally admitted cause, some subtile product of the joint action of heat and moisture upon dead vegetable matter. And there is little doubt, too, that among paroxysmal fevers, at least in their nature and origin, must be included those not distinguishable from continued fever, it may be in the greater part of their course, if in their commencement or decline they have exhibited a well-marked intermittent character; and such also as resemble continued fevers throughout their course, if by the time and circumstances of their appearance they can be identified with those last mentioned. Of this large race of fevers, differing in aspect, but not we believe in nature, sprung from a parentage varying in energy but alike in kind, it may be stated that their severity increases as we recede from the poles to the equator, the summer heat of some northern climates being insufficient for their production, while the ardent rays of a southern sun hatch a deadly brood of them in regions marked by the varied beauties of a luxuriant vegetation.

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* Practice of Medicine, Philadelphia, i. 254. † P. 195.

‡ Morbid Poisons, ii. 535.

A belief in the contagious nature of these fevers has been entertained only by a very few authors, and has probably no supporters in the present day. It is difficult to judge of their natural duration, and of their tendency to a spontaneous termination, seeing that the sufferers from them are for the most part continuously exposed to the agencies in which they originate, and that previous open attacks favour rather than oppose their subsequent reappearance under the influence of similar specific, and indeed of other trivial causes. But, notwithstanding this proneness to renewed or fresh attacks in those who have thus suffered previously, it seems certain that the constitution may by gradual and continued habituation become so tolerant of the malarious poison from which paroxysmal fevers spring, as indeed of some other narcotic poisons, as to endure, with comparative security, exposure to it under circumstances which to those not so prepared would be dangerous or fatal. And this law in reference to this poison is expressed by the term acclimation, and based on the observation that the natives of malarious countries, and those who have been long residents in them, and are said to be acclimated, are less liable than strangers to suffer and to sink under the endemic fevers which prevail around. Yet that even natives do not escape the more silent influences of the noxious atmosphere in which they live, is attested by what we read of the sallow aspect, of the decrepid and bloated forms, of the premature old age and early death, of the stunted growth alike of body and of mind, that mark the population of the Maremma of Italy; while Rome, annually deserted by her wealthier inhabitants, shows that here at least there is not that immunity from peril for her citizens, which is perhaps possessed in a greater degree by the darker races of Africa when exposed to the deadly emanations of her sweltering jungles. Acclimation has apparently no other power against malaria than that of habitual use in the case of other narcotic poisons, as opium or alcohol. In each case there is a diminished susceptibility to the more immediate and energetic operation of a large amount of the poison, while, nevertheless, impaired vigour and shattered health mark in each case its slow but certain ravages.

Paroxysmal fevers attack the feeble and dispirited, the ill fed and ill clothed, rather than those who are more favourably circumstanced; but they belong rather to the open country than to towns, and when they visit these last it is in the wide and open streets, the abodes of wealth and luxury that they make their attacks, while they spare the closely crowded but filthy dwellings of the poor. As regards Rome, Dr. Macculloch has remarked that malaria must there be imported, not generated*; while he says in another place, that its progress through that city appears to be determinate if slow, so as gradually to drive the inhabitants before it, as far at least as these are opulent and able to quit their unhealthy habitations, since not only does poverty check the migration of the lower classes, but their crowded streets are far less affected by this poison than the dwellings of the rich.† "The Judaicum (he adds farther on), which might be expected to suffer as well as the streets around it, is always, as I am informed,—generally, may at least be believed,—free from the diseases in question; and what the confinement and filth of that place is, needs not to be stated to those who know Rome even by reading." ‡

Of continued fever (the typhus or synochus of authors), the generally received though not the universally admitted cause is a contagion, or morbid poison, transmitted from the sick to the healthy, in uninterrupted succession, but incapable of reproduction from any other source. Its prevalence and severity are favoured by a temperate or cold climate, whence its fatality is greatest in northern latitudes, while it is rare or unknown within the tropics; winter, too, and spring, rather than summer and autumn, are the seasons of its greatest predominance. Although its course is liable to be prolonged by various incidental but very frequent inflammatory complications, its natural duration may be considered as definite for the same epidemic, however different in those of different years. In respect of its cause, as we have just stated, it presents a close analogy with the eruptive rather than with paroxysmal fevers; like them, too, it has been observed often to present a characteristic rash, although this is neither so constant in its appearance, so uniform in its character, or regular in its progress, as those of the exanthemata. In typhus, as in eruptive fevers, a first attack affords some protection against a future one; but no habituation to the poison defends those who have long watched or tended the sick from themselves becoming victims; there is no evidence of any thing like the acclimation which modifies the liability to remittent or intermittent fevers. To have lived for a time unscathed in the atmosphere of typhus, affords no certainty to the physician or to the nurse of an ultimate escape.

Typhus again, unlike paroxysmal fever, has so distinctly for its favourite abode the crowded, ill ventilated, and ill drained dwellings of the poor, surrounded as they often are by stinking mud and every variety of filth, that some have found an explanation of its existence in the influence of these circumstances alone. In support of our own views, however, we quote the sentiments of a writer in the "British and Foreign Medico-Chirurgical Review" for April, 1849. "If space would allow, we could bring what we deem to be proof of the position we confidently maintain, that neither famine, nor defective ventilation, nor insufficient drainage will separately produce maculated fever; we doubt if in the aggregate they will do this; but we are certain that all and each, form powerfully concurring influences that determine its extension. From all that is known of the disease, it is highly probable that its development is owing to the operation of a subtile and specific virus that propagates itself by contagion, and *we* incline to think exclusively so."* One other ground of contrast between paroxysmal and continued fever is to be found in this, that in the former it is a legitimate object of treatment, and one often attained in practice, to stop the disease by the specific agency of antiperiodic medicines, which, by preventing the recurrence of the fits, terminate the course of the malady; whereas it is notorious that medical writings of the present day teem with expressions to the effect that continued fever cannot be cut short or cured, and that the efforts of the physician should not be directed to this end, but that the progress of the disease should be assiduously watched with the view of moderating excessive action, palliating complications when any such exist, supporting the powers of the patient when deficient, and so sustaining him till nature herself relieves him of his enemy.

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* An Essay on Malaria, p. 258.

† Ibid. p. 253.

‡ Ibid. p. 292.

Paroxysmal and continued fevers then agree in this, that they both originate in specific morbid poisons absorbed from without; and herein they differ from all ordinary phlegmasiæ, as inflammations of the head or lungs, and even from many blood diseases, as rheumatic fever and albuminaria, in which though the blood be depraved, we have no evidence that it is in consequence of a pernicious agent introduced from without. Both alike are prone to attack the exhausted, the dispirited, and the feeble, rather than those who are stout in body and in mind. But the contrasts which they present as to the climates, seasons, and localities of their respective prevalence, the indefinite course of the one class which yet is more influenced by treatment, the more definite yet less easily curtailed duration of the other, the phenomena of acclimation observed in the one and wanting in the other, the protection resulting from a previous attack wanting in the one but obtaining in the other,—all these grounds of distinction have been pointed out above in disproof of the existence of so close an affinity between them as their common name and nosological proximity seem to imply, and in support of the essential difference of the causes to which they are respectively to be referred.

A third genus of fevers is designated inflammatory, and these, unlike the preceding, recognise no specific morbid poison as their source, but seem due to the combined action of more or fewer of a numerous train of directly stimulating influences, the subsequent exhaustion resulting from and being co-ordinate with the intensity and duration of the original excitement. Among the exciting causes enumerated by Dr. Copland are whatever *directly* stimulates in an inordinate manner the nervous and vascular systems; as change of climate, especially emigration from cold or temperate to very warm or dry countries; exercise in the sun's rays, the influence of dry winds, and very dry and cold states of the air; sudden vicissitudes of weather, or of season; a heating or very full diet, warm condiments or sauces, and stimulating liquors; change from a low to a full diet, great bodily exertion, violent mental excitation and emotion; and whatever *indirectly* induces great excitement or vascular reaction, as the impression of cold when the body is overheated and perspiring, an overloaded state of the digestive organs, and obstruction of the excretions. The predisposing causes, according to the same author, are chiefly met with in young adult men; in the plethoric, florid, and robust; in persons of a sanguine and irritable temperament; in those who have experienced the suppression of an accustomed evacuation, or who live fully, richly, and intemperately, or who habitually take invigorating exercise. These fevers are most prevalent in cold and dry, or very warm and dry seasons and climates, in highly elevated localities, and amongst mountaineers, sailors, soldiers, and people living in the country.*

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* P. 309. See also Dr. Bancroft on Yellow Fever, and Dr. R. Williams on the Typhoid Poison.

Having offered these preliminary remarks in elucidation of some of the general phenomena that belong to the order of fevers, as well as of the wide differences that separate the different genera, we proceed to describe them in detail.

FEBRES INTERMITTENTES, OR INTERMITTENT FEVERS.

The title of intermittent is applied to that kind of fever which consists of a succession of paroxysms, between every two of which there is a distinct and perfect intermission of febrile symptoms, or an apyrexial period.

The time which elapses from the commencement of one paroxysm to the commencement of the next succeeding, is called the interval; that which intervenes between the end of one and the commencement of the next, is called the intermission. The interval, therefore, includes the duration of a single paroxysm and of a single intermission. Now it is a very remarkable and peculiar circumstance belonging to this order of diseases, that the successive intervals in the same fever, while it remains unchanged in character, are exactly, or almost exactly, equal in length; and that the length of this interval is almost always equal to 24, 48, or 72 hours: so that not only do we have the paroxysms returning with a regularity which, when once the type of the fever has been ascertained, enables us accurately to anticipate their recurrence, but as the interval consists in each case of a single day, or of two or three whole days, the return may be expected at the very same hour of the day at which the fit had previously been observed to take place.

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* Dictionary, i. 798.

Intermittent fevers, or agues, are said to vary in their type according to the different lengths of their intervals. Thus, an ague in which there occurs a fit or paroxysm every day, which has therefore an interval of twenty-four hours, is said to be a quotidian, or to have the quotidian type. If the interval be of forty-eight hours, it is a tertian ague, or has the tertian type; and so of the quartan, the interval of which reaches to seventy-two hours. Now these three types are by far the most frequent in occurrence, and therefore the most important in practice, and have been denominated the regular types. There are, however, other types which are called irregular, which bear certain relations to these, and require a brief enumeration. Thus we have the double tertian, with a daily paroxysm, but differing from the quotidian in this, that the fits on alternate days correspond in severity, character, and duration, while those on successive days differ in some or all of these respects. A triple tertian has two fits on one day, and one on the next. A duplicated tertian has two paroxysms on alternate days, with a whole day of intermission. A double quartan has a fit on one day, a slighter fit the next, and a complete intermission on the third day; the paroxysms recurring in a similar manner on the fourth and fifth days. A triple quartan has a paroxysm every day, but in such a manner that those only which are separated by two whole days resemble each other. The duplicated quartan has two paroxysms on one day, with two whole days of intermission. Besides these, we find other varieties mentioned, as quintan, sextan, heptan, octan, nonan, and deciman, whose names indicate their respective periods and types; and all others are included under one group, as vague, or irreducible to any type. The whole of these last are designated by Dr. Copland as erratic or atypic forms of ague, and are said to be rare; but as they are sometimes observed, and occasionally persevere with great obstinacy, it is necessary to call attention to their possible occurrence. We have ourselves met with several examples of well marked agues of an octan type. Of the regular types of ague, the tertian is the most common; indeed, this is considered, *par excellence*, the natural type of ague: the quartan is next in frequency; and the quotidian is not so often met with as either of the other two. Of the irregular types, the double tertian is most commonly observed. In some instances both quotidians and quartans exhibit a tendency to diminish their intervals by about two hours at each succeeding paroxysm, so that the intermission becomes continually shorter as the disease advances; while in other cases the reverse of this obtains, the successive fits being each of them delayed by about an equal period beyond the time at which it would have commenced had the last preceding interval continued unchanged. Besides this, the conversion of one type of ague into another often occurs; tertians and quartans changing into quotidians, or into double or triple tertians and quartans, when they become aggravated; and quotidians passing into tertians when they are somewhat ameliorated. Agues, particularly quotidians, may also be converted into remittents, or even into continued fevers, by the constant operation of the exciting causes, or by other powerful influences; but they often assume a complicated or an irregular form in the course of transition. But whilst in some instances, and especially at the commencement of their course, these changes of type are frequently observed, it is remarkable, in other cases, with what pertinacity the quartan type has been retained when the affection has become inveterate; nay, more than this, it has even been found that where the disease has been interrupted by appropriate treatment, and has subsequently reappeared, the paroxysm has observed the same day of return on which it would have fallen if no such interruption had taken place. Dr. Graves has recorded a striking example of this fact, in a case the continuity of which was thus repeatedly broken for considerable periods, and in which no permanent cure was effected till the expiration of six-and-twenty months. In three only out of sixteen occasions of return was the law here spoken of departed from; in thirteen it was exactly observed. Hence this author draws the inference, "that the law regulating the periodicity of agues applies not only to the succession of paroxysms, but is extended to the free intervals between them; in other words, that the same law which governs the disease while it occasions fits continues likewise to preside over its latent movements during the interval when no fit occurs, and thus the true periodic rate is carried on, though, as in a clock from which the striking weight has been removed, the usual signal does not mark the termination of each certain definite portion of time."

When these fevers arise in the spring of the year, they are called vernal; and when in autumn, they are known by the name of autumnal. Intermittents often prove obstinate, and are of long duration, in warm climates; and they not unfrequently resist every mode of cure, so as to become very distressing to the patient, and often give rise to other chronic complaints, but more particularly an enlargement of the liver or spleen, ending in anasarcous swellings and dropsy.

Each paroxysm of an intermittent fever is divided into three different stages, which are called the cold, the hot, and the sweating stages.

The cold stage commences with languor, a sense of debility, and sluggishness in motion, frequent yawning and stretching, and an aversion to food. The face and extremities become pale, the features shrink, the bulk of every external part is diminished, and the skin over the whole body appears constricted, as if cold had been applied to it; and sometimes nausea or vomiting ensues. At length the patient feels very cold, and universal rigors come on; the respiration is small, frequent, and anxious; the urine is almost colourless; sensibility is greatly impaired; and the pulse is small, frequent, and often irregular. In a few instances, drowsiness and stupor have prevailed in so high a degree as to resemble coma, or apoplexy; but this is by no means usual.

The symptoms abating after a short time, the second stage commences with an increase of heat over the whole body, redness of the face, dryness of the skin, thirst, pain in the head, throbbing in the temples, anxiety, and restlessness; the respiration is fuller and more free, but still frequent; the tongue is furred, and the pulse has become active, hard, and full. If the attack has been very severe, then, perhaps, delirium will arise.

When these symptoms have continued for some time, a moisture breaks out on the forehead and neck, and by degrees becomes a sweat, and this at length extends over the whole body. As this sweat continues to flow, the heat of the body abates, the thirst ceases, the urine deposits a lateritious sediment, respiration is free and full, and most of the functions are restored to their ordinary state; the patient is, however, left in a weak and wearied condition. This constitutes the third stage. In general the duration of a paroxysm is from six to eight hours.

Having pointed out the phenomena usually attendant on a paroxysm of intermittent fever, and likewise their mode of succession, it may not be unworthy of observation to notice, that in different cases they may prevail in different degrees; that the series of them may be more or less complete; and that the several stages, in the time they occupy, may be in different proportions to one another.

After a specific interval, according to the species of ague, a fresh paroxysm commences, in the manner above described.

The different types of intermittents have their appropriate times of day for the commencement of their paroxysms, and also certain habitudes in relation to the length of these. Thus the fit of the quotidian is wont to commence in the morning, that of the tertain about noon, while that of the quartan begins about five o'clock or later. As regards the usual length of the paroxysm, Dr. Mason Good states it as under eighteen hours for the quotidian, under twelve for the tertian, and under nine hours for the quartan. In any one of these types, however, the duration may fall far short of, or be extended considerably beyond, the space of time here indicated. As a general rule, the quotidian has the shortest cold stage (lasting from half to three quarters of an hour), and the longest paroxysm. In the tertian, the hot stage is severe, and of long duration; while the quartan has the longest cold stage but the shortest paroxysm. The fits of ague are said occasionally to be partial, that is, to affect a portion only of the body, in which respect they bear some analogy to St. Vitus's dance, the attacks of which are much more limited in some cases than in others. They are also, at times, imperfect, wanting, that is, one or more of their stages; and thus consisting of a cold stage alone, or commencing with the hot stage, having no sweating stage, or only this last. Sometimes the ague presents no distinct paroxysms, but patients have general chilliness at various periods and great depression of spirits; and this state of things is what constitutes the dumb ague of popular language. Independently of differences of type, intermittents are distinguished by characters which are sufficiently expressed by the epithets applied to them, as simple, inflammatory, adynamic, complicated, and masked; the masked agues being those in which, instead of the ordinary succession of stages, we have some affection, generally one of the nervous system, appearing for a time, disappearing, and then recurring with the regular periodicity of an ague fit. The exact periodicity of ague being its most distinctive peculiarity, it seems that all diseases possessing this character in a marked degree, are in their nature so nearly akin as to be benefited by the treatment which is adapted to the cure of intermittents. Some periodic headaches and neuralgias pertain to this form of disease. Dr. Copland mentions having met with a case of quotidian intermittent flatulency; and we have ourselves treated successfully with the remedies of ague, a case of vomiting which set in daily at noon, and an octan diarrhœa; but an asthma commencing at eight o'clock on alternate evenings and lasting all night, resisted all our efforts for its relief.

More or less febrile disturbance of the general health precedes the appearance of the first distinct fit of regular ague; and in the quotidian, where the intermissions are short, the patient does not wholly recover from the effects of the last before he begins to suffer from a fresh attack. When the disease has been of long duration and the constitution has sustained permanent injury, this must manifest itself, of course, during the periods of apyrexia, as it will long after the paroxysms shall have altogether ceased. Spring and autumn are the seasons of the year most prolific in intermittents; tertians and quotidians appearing especially in the former, and tertians and quartans in the latter season.

The rules laid down for distinguishing quotidian ague from some forms of hectic fever, the only disease which can occasion any ambiguity, are the following. In hectic the complexion is clear and florid; in ague it is muddy and yellow. In hectic the exacerbation is most distinct in the evening, whereas the quotidian intermittent comes on, for the most part, early in the day. When hectic exists, no distinct apyrexia will occur. In the intermission of ague, the pulse and skin become natural. The tongue in hectic is only little affected, but is said to become furred and dry in the hot and sweating stage of ague. The urinary deposit is, according to Dr. Prout, pink in hectic, but lateritious in ague.

We proceed to notice the terminations of ague.

Such a depression of strength has been known to take place on the attack of an intermittent fever, as to cut off the patient at once; but an occurrence of this kind is very uncommon. Patients are seldom destroyed in intermittents from general inflammation, or from a fulness of the vessels either of the brain or of the thoracic viscera, as happens sometimes in a continued fever; but when their duration is of any length, they are apt to induce other complaints, such as loss of appetite, flatulency, scirrhus of the liver and spleen, dropsical swellings, and general debility, which, in the end, now and then prove fatal. In warm climates particularly intermittents are very apt to terminate in this manner, if not speedily removed; and in some cases they degenerate into continued fevers.

When the paroxysms are of short duration, regular in their recurrence, and leave the intervals quite free, we may expect a speedy recovery; but when they are long, violent, and attended with much anxiety and delirium, the event may be doubtful. Other unfavourable symptoms are great prostration of strength, vertigo, fœtid excretions, the presence of dysentery, cholera morbus, enlargements of the liver or spleen inducing dropsy or jaundice, and convulsions occurring during the paroxysm preceded by coma. Relapses are very common to this fever, at the distance even of five or six months, or even a year; and autumnal intermittents are more difficult to remove than vernal ones.

One peculiarity in this fever is, its great susceptibility of a renewal from very slight causes, as from the prevalence of an easterly wind, exposure to night air, or from the repetition of the original exciting cause. It would appear likewise, that a predisposition is left in the habit, which favours the recurrence of the complaint. In this circumstance, intermittents differ from most other fevers; as it is well known, that after a continued fever has once occurred, and been completely removed, the person so affected is not so liable to a fresh attack of the disorder, as one in whom it had never taken place.

It is manifest that during the cold stage of ague, when the blood has left the surfaces and extremities, it must be collected in the central organs in more than its normal quantity, and that their state of congestion and distension must increase still farther that oppression of which it is itself a consequence. Death may take place either from overpowering congestions in the cold stage, or from rupture of the spleen, but it most frequently results from the superinduced disease of internal viscera, often combined with a morbid state of the circulating fluids.

The chief lesions are seated in the liver, spleen, digestive mucous membrane, and lungs.

The liver is often enlarged, and its consistence either increased or diminished; tubercular or purulent formations being, moreover, dispersed through its substance. Engorgement of the vessels with dark blood, distension of the hepatic ducts and gall bladder, with a dark, thick, and viscid bile, are often observed in connection with other lesions, but more especially with enlargement and softening of this organ.

The spleen is often remarkably enlarged, its envelope sometimes injected and thickened, its consistence frequently diminished, its structure friable, oftener almost diffluent.

The digestive mucous surface is, in various parts, in the ilium, the cæcum, colon, stomach, duodenum, and œsophagus, more or less altered, often softened, injected with dark blood in patches or spots, and occasionally ecchymosed. The mucous follicles are frequently enlarged or inflamed in various parts. Ulceration is seldom observed unless the disease has been complicated with diarrhœa or dysentery. The mesenteric glands are sometimes enlarged; the lungs sometimes congested. The brain and its membranes are not often much altered, unless in rare cases in which coma has attended the fit, or apoplexy, or convulsions, or paralysis has occurred in it, when congestion, and effusions of serum between the membranes or in the ventricles are the usual appearances. Dropsical effusions, especially in the peritoneal cavity and cellular tissue, are sometimes also observed.*

"The pathology of malarious fevers," says Dr. Williams†, "is different from that of typhus; for the secondary actions of the paludal poison affect the liver, the spleen, and the peritoneum, while the typhoid poison affects more commonly the lungs, the preceding viscera being in no instance diseased. With respect to the alimentary canal, in remittent or yellow fever the poison acts principally on the stomach and duodenum; but in typhus the principal seat of the disease is the ileo-cœcal valve, inflammation of the stomach and duodenum being the exception."

We conceive that the continued fever of malarious origin, occasionally commencing as an intermittent or remittent, differs from paroxysmal fevers in degree rather than in kind, is to be relieved by similar treatment, and is distinguished from typhus in being non-contagious, as well as in other particulars. And this we believe to be the opinion of the two learned authors quoted just above.

Causes of Paroxysmal Fevers. — It is matter of general agreement that the cause of intermittent fever has its origin in moist situations, in swampy or marshy grounds. Whatever its nature, it is supposed to be a product of the decomposition of vegetable matters; and, as it probably exists in a gaseous form, it has received the specific designation of malaria. Some of the laws regulating its generation, its ascent, and diffusion, have been pretty well ascertained; but conjectures only can be hazarded as to its chemical constitution. The presence of some kind of dead vegetable matter is a condition necessary for its formation; and, as regards this essential requisite in its production, we can assign no limit to its development as due to an excessive amount of the material to which it owes its birth. It is rather to be believed that, other things being equal, the quantity or intensity of the poison will bear some proportion to the abundance of its vegetable source. But with the other two co-operating agents in the extrication of malaria the case is very different; since excessive as well as deficient temperature, abundant wet as well as the absence of all moisture, is happily alike prejudicial to the poisonous birth. Yet we cannot doubt that a high temperature directly favours the evolution of an abundant and virulent miasma, and that it is only by dissipating the moisture necessary to the chemical changes to be effected, that excess of temperature puts a stop to malaria. In like manner an excess of water probably opposes the generation of malaria, rather by its indirect effect in reducing the temperature, and it may be also in screening the vegetable material from the heat, than by any more immediate influence of its own. Be this as it may, it appears certain that the extremes of drought or deluge are alike unfavourable to the creation of this poison, which requires, moreover, a sufficient temperature for its development; since agues do not arise when the earth is parched in summer, nor when it is flooded during the rainy season of hot climates, or chilled during the cold winters of temperate ones. Hence a large expanse of deep water, whether in lake or river, is not found to vitiate the air; and its neighbourhood is only dangerous when the borders or banks form more or less extensive swamps around it.

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* Copland's Dictionary, i. 938.

† Morbid Poisons, ii. 535.

Malaria is probably always associated with watery vapour; indeed, considering the manner of its origin, it is barely possible that it should be otherwise. Whether this association be accidental or necessary, it is beyond a doubt that it for the most part obeys the same laws as mist. Thus experience has shown that it is heavy, and therefore rests in low situations; whence generally a valley or plain is found to suffer from its presence, whilst the elevation of a few hundred feet renders a mountain or hill a healthful residence. It is even in malarious districts considered safer to sleep in the upper stories of houses than on a level with the ground, and in some of the worst districts of Italy stooping down at work in the fields has been followed by an immediate seizure, while they who stood upright have escaped any similar attack. That it is a material substance appears from this, that it is wafted by the winds; so that, where these prevail in any set direction, the leeward is always more dangerous than the windward side of places in which it is produced; and it is not to be doubted, although some diversity of opinion prevails on this point, that plantations of trees form screens and barriers which oppose its diffusion. Thin substances, as gauze, placed over the mouth and nose, are by some considered efficacious in preserving individuals from its influence. Like mist or vapour, it rises with the warmth of morning, so as to constitute this a dangerous time for exposure to its effects; as the heat of day increases it expands, and thus becomes less energetic in its rarer or less condensed form; but it descends again when precipitated by the chills of sunset, and hovers with the falling dew over the region of its domain, making the early night far worse than the day for those who are so bold as to expose themselves to its power.

It is common to read of sailors paying the forfeit of their lives as a consequence of their sleeping ashore, in countries infested by malaria. Yet it is early morning and early night that are thus pregnant, both with visible mist and with active poison; midday and midnight are free from them both alike. We are told that at Walcheren many men made excursions through all parts of the island by day with complete immunity from fever; and it appears that in Italy the air becomes healthful after nine or ten o'clock at night.

The distance to which malaria may be conveyed is a question of considerable interest, and of much practical importance.

It has been found, as was to be expected, that this distance varies very greatly in different places, and under different circumstances. Thus the greater or less extent of the localities in which it is produced giving birth to the poison in more or less abundance, the less or greater amount of temperature permitting it to float compactly near the surface of the earth, or causing it to rarify and expand and mount high into the atmosphere, the greater or less evenness of the district over which it has to be conveyed, and the greater or less power and steadiness in the wind which sends it on its way, must severally tend to promote or to prevent its conveyance to distant sites with its power of mischief unimpaired. That its range is sometimes very limited appears from the fact that the sailors on board ship, within a cable's length of the banks at Walcheren, escaped sickness altogether. Sir G. Blane, in his observations on this fever, writes: — "Ships at a distance of 3000 feet from swampy shores (a distance to which it did not extend in Zealand), and even farther, were affected by noxious exhalations in the West Indies; and I have been credibly informed of the like fact with regard to the India ships in the channel which leads to Calcutta." In the Niger expedition in 1841, and in those to the east coast of Africa in 1822 and 1825, it was in the rivers that the deadly remittent fevers made their ravages. The crews were healthy at sea, at no great distance off the coast. Dr. Macculloch has, however, cited an instance where cholera was conveyed by a sudden breeze from the shore to a vessel four miles at sea, in so severe a form, that all on deck at the time were quickly seized and rapidly sunk under it; and he infers that malaria might be carried to as great or greater distances. The infection of parts of London by miasmata generated in the marshes of Essex, is matter of general belief, and implies their transportation over several miles of space. The author just mentioned adduces the examples of fogs, and odours, and large swarms of insects, as affording strong arguments from analogy in favour of the possible transportation of malaria over distances far greater than any of these. As regards odours, he states it as an admitted fact that dogs can scent the land from sea before it becomes visible, and while therefore it is many leagues off. And he has rendered it probable, by more direct reasonings, that in early spring the exhalations of Holland are borne to

England on the east, to French Flanders on the south and south-west winds.

We will give his argument, in part at least, in his own words.

"It consists with the experience of all the inhabitants of our eastern shores, that the ague often appears with the fogs of spring which arrive from sea; that, in fact, they are brought in that fog, which is popularly supposed their real cause. Now, if in Essex or Lincolnshire there are cases where the malaria might be generated from the immediate land, appearing to have arrived in the fog only by a deception, there are points on the coasts of Norfolk and Suffolk, as in many other places, where no local malaria exists for many miles, and in which if the agues did not arrive in the sea fog they could not appear at all. And this is no less true of the eastern coasts of Scotland, where ague as a local endemic disease is unknown, and where no malaria is generated.

"What then is the solution of this? Holland, or the shores to the northward, are here, probably, the sources of malaria, and it is transported to our own coasts in the fog and in the east wind."

It is allowed that the east winds of autumn do not thus convey malaria, and many reasons may be assigned for this difference. It is matter of experience that agues appear amongst us at a time of year and under circumstances which exclude the notion of their being of indigenous and recent production. Hence some authors, as Dr. Elliotson, have assigned a term of many months as the occasional period of latency of these diseases, believing that the intermittent which shows itself in spring has originated in causes which had affected the system during the previous autumn. To us Dr. Macculloch's explanation appears at least as probable as the other, and it is that to which Dr. Chambers has expressed his assent.

It has been well said that a marsh, as far as its essence consists in producing malaria, is not to be defined by space, or does not demand extent. We must therefore regard as possible sources of this mischief all places in which the essential conditions of moisture, vegetable matters, and warmth can be brought to react upon one another. Thus meadow-lands in alluvial soils, shallow pools, ditches, the banks of inconsiderable ponds, canals, the bottoms of gravel pits, and even the ground around dung heaps, or the rush-grown turf by the way side, may each produce its own limited amount of virus to the injury of individuals or families residing or employed near them.

Artificial sources of malaria are known to exist also; thus, putrefying coffee, potatoes, pepper, &c., flax and hemp in the process of soaking, the bilge-water of foul ships, and water which has undergone changes in casks, are all found to produce this or an analogous poison. The leakage of sugar into the holds of vessels is known to generate in the water contained there a more than usual degree of unhealthiness. Rice grounds are notorious sources of disease, so much so that we read that the Duke of Lucca has, on this account, recently forbidden the culture of this plant in his territories.

We are still in ignorance as to the chemical nature of malaria. Sulphuretted hydrogen has been long suspected to be its active constituent, and some investigations of the late Professor Daniel appeared, for a time, to give increased foundation for this suspicion. More recent researches, however, undertaken with the express view of determining this point, have led Dr. McWilliam to the conclusion that none of this gas was to be detected in water recently obtained from the rivers or near the coast of Africa, and he adduces the additional experience of Messrs. Tait, Goodridge, J. Russell, and Crawford, to the effect that no sulphuretted hydrogen existed in the fresh waters of the coast of Africa, or in that of the rivers Gambia, Pongos, Sierra Leone, Nun, Bonny, and Pongo, localities in which malaria abounds. It was found, however, that water which exhibited no trace of the presence of this gas when first collected, contained it in abundance after it had been kept in corked bottles; and this circumstance may have contributed to the error into which the professor fell in the first instance. When the bottles containing it were hermetically sealed, the water gave no more indication of its presence after keeping than at first.

The fact that there are known to be localities rife with malaria where there is no stench or smell to give warning of its existence, is opposed to the supposition of its consisting of so fetid a gas as sulphuretted hydrogen. It would be useless to mention the various hypotheses on this subject which have found advocates in turn. The theory of malaria consisting of some compound of carbon and hydrogen has been revived of late by Liebig, but we have seen no arguments to establish the validity of this opinion.

Paludal fevers increase in severity from the pole to the equator, their severest forms not being seen in higher latitudes than 43° to 46°; and, according to Macculloch, are to be expected during the warm season in every country in which the mean annual temperature reaches 45°, and much more certainly when it is as high as 50° Fahr.

Much might be said of the caprices of malaria, of its appearing at times in places where it was previously unknown, after the adoption of measures such as drainage, planting of trees, and breaking up of the soil, which in other cases are found to prevent its generation. Probably most, if not all, of these apparently anomalous cases admit of explanation on the principle that opposite results are obtained according to the influence of such measures on the relations of heat and moisture. Thus drainage, when complete, has a remedial influence by exhausting superabundant moisture; but if it convert a lake into a swamp, the contrary effect will probably ensue. Plantations, by moderating the temperature, may put a stop to malaria; but where the atmospheric heat, when thus reduced, is still adequate, they may favour production and detention of the poison by ministering to a sufficient supply of moisture; and again, breaking up the dry crust of earth may admit the solar rays to a damper layer of earth, to which they had not before penetrated.

The persistence and particular direction of currents of air will probably account also for the fact, that in some cases elevated situations suffer from this scourge, while such as are lower and nearer to its source are comparatively exempt.

We shall offer no apology for the length of our sketch of an agent which, as an exciting cause, has been accounted to produce many of the diseases which afflict, and half the mortality which depopulates the globe, but proceed to notice the predisposing causes which assist in bringing mankind under its power.

These are to be found in whatever circumstances impair the health and depress the vital energies, whether of a physical or moral nature. Thus insufficient or improper food, with inferior clothing and the other evils of their lot, cause the poorer part of a community to suffer more than their richer neighbours. In armies the privates are more susceptible of endemic diseases than their officers, who are better fed, and clothed, and lodged; and who, in their turn, suffer a greater proportionate mortality in battle. Temporary exhaustion from fatigue or fasting, facilitates also the admission of the poison, and it seems probable that there is something in the condition of sleep (independently of the time at which and the position in which it may be indulged), that has the same effect. Gluttony, intemperance, and debauchery, by their enervating influence on the system, weaken its means of resistance, and even indolence and inactivity remove some of its safeguards. Depressing passions also increase the perils of those exposed to marsh miasmata, fear operating in this way, so as to render the timid, those most apprehensive of its attacks, the first to become its victims. Defeat, disappointment, despondency, any or all of these, make a dispirited or retreating army more prone to endemic disease than the same army, equally exposed, while advancing against an enemy, and hopeful of success. Mental inactivity, as well as bodily, has a prejudicial influence; at least the reverse of this, viz. intense mental occupation, seems to have a protective power. Thus Dr. McWilliam, the able medical superintendent of the disastrous Niger expedition of 1841, writes of himself: "My case affords a strong exemplification of the fact, that disease is prevented, or at all events retarded, by intense mental occupation; for I am confident that the fever made several efforts to seize me, so to speak, while descending the Niger, but never succeeded in overcoming me until the excitement had in great measure subsided, after the sick had been all safely landed at Fernando Po. This excitement was sufficient to keep under a disease which had already, to a great extent, laid hold on me, with my body in a state of exhaustion otherwise favourable to its full development." A circumstance to be noted in connection with the action of malaria is the habituation which is acquired by those long exposed to its influence, in consequence of which they become less liable to suffer from its attacks in an acute form. Hence it is that natives of and residents in aguish districts, often escape intermittent fevers, and the same is observed in reference to the endemic fevers of hot climates. A specific term has been applied to those who, by long sojourning in any place, have become in some measure proof against its evils, and who are said to be acclimated. Further than this, it seems that the inhabitants of marshy lands in one region are somewhat less susceptible, when they remove to another malarious country, than they who have dwelt in hilly districts, and been accustomed to a purer atmosphere. Yet, though the system may thus be in some degree prepared, it is not supposed that any similarity in the character of far distant localities can constitute the residence in one a perfect acclimation for the other. This quality of acclimation, like others the result of habit, may be lost by disuse, so that a removal for any considerable time will cause the individual on his return to want much of the security which he before possessed. A striking illustration of what has just been said, is afforded by what occurred in the Niger expedition before mentioned, in which, out of 145 white men, 130 were attacked by fever, of which 40 died, while of the blacks, amounting to 158, 11 only suffered, and that in a much milder form; and it is remarked of these eleven, that they had all been in England, and for some years absent from their respective countries. These facts exhibit in the action of malaria a close analogy to that of several of the narcotic poisons, as of alcohol, opium, and tobacco, with regard to which there is daily experience that, fortified by habit, men may use large quantities without suffering from intoxication, or stupor, or other sudden and violent effects: but as, in the case of these poisons (or of one of them at least), we cannot say that they are thus rendered harmless, so neither do the inhabitants or the acclimated escape unscathed; visceral engorgements, anæmic pallor, and shattered constitutions, often mark those who have escaped the endemic fevers of countries in which they have been born or domiciled.

The period of latency of intermittent fever may be less than twenty-four hours, while its average duration is reckoned between ten and fourteen days; and some believe it to extend to eight or nine months. As a general rule it is said that the shorter this period of incubation the severer is the disease; severity, however, is not here to be confounded with obstinacy, the chronic forms being often more untractable than the more acute. If the fact of the importation of agues, as spoken of above, be assented to, the arguments in support of their many months of latency will be for the most part removed; since we shall then attribute to a recent application of the virus what before was referred to cold alone. There is something improbable at first sight, we think, in supposing that the seeds of ague sown in autumn should be dormant during the cold winds of winter, and be aroused by the cold east winds of spring; and in this and other similar cases, it is difficult, if not impossible, to disprove all more recent exposure to the exciting cause.

The liability to relapse of those who, residing in aguish districts, have once been affected by malarious disease, and even of those who have left such unhealthy sites, is very marked, and is shown by its return, after long intervals of freedom, upon the occurrence of slight disturbing causes. Thus we read in Dr. Smith's account of the diseases of Peru, of a woman who had a recurrence of ague whenever she fell into a passion, and of a man in whom it seemed excited by the irritation of giggers in the foot. The instances, too, are numerous, where cold or other causes reproduced intermittents in those who had long ago suffered from them at Walcheren, or in Spain.

The treatment of intermittents naturally divides itself into two branches, namely, the preventive and the curative. The former including both such precautionary measures as are to be undertaken on an extended scale by governments or societies, and such as each individual is competent to practise for himself; the latter being subdivided into such remedial means as are to be resorted to during the paroxysm, and such as are to be employed during the intermission, with the view of warding off the recurrence of the fits.

It is manifest that the class of preventive means must have reference to the enfeebling or removal of the exciting or of the predisposing causes which act upon the frame. Now, drainage of marshy lands, wherever it is practicable, is the one expedient which goes at once to the root of the evil, provided that it thoroughly remove all the lesser as well as the greater sources of malaria which have already been pointed out. But when, as will often be the case, this measure is impracticable, much may be done for the security of old settlements by the judicious interposition of screens of trees between them and the source of danger; much for the preservation of new colonies, by a regard in the selection of sites, not only to those principles which have been indicated above, and which may sometimes mislead us when applied to an agent so capricious as malaria, but also to the experience of persons residing on the spot. Mr. Wallace, when writing on the subject of tropical fever, in speaking of the proper choice of a position for the encampment of troops, states, as the two great points to be attended to, "1st, to keep as clear as possible of all wood, jungles, or swamp, and 2ndly, to have a barrier of some kind, as a piece of rising ground, between them and the quarter whence the wind blows." "In the case of ships on a windward coast, where the soil is such as to give out pestilent miasmata, he recommends that any close approximation to the shore should as much as possible be avoided. But that if the vessel have to go into harbour, or to approach nearer to the coast than is altogether safe, in addition to the awnings usually spread, curtains should depend of sufficient density and extent, to interrupt and throw aside the breeze as it reaches the vessel. The ports should be closed during the night, and, if possible, the men should be persuaded to sleep on the main or lower deck." In the case of ships, as we have shown, there is peril from within as well as from without, and the former of these should be guarded against by frequently washing the hold till the water comes out pure. The necessity of avoiding, as far as possible, exposure to the mists of morning and the dews of evening, should be impressed on all, whether they have to direct the movements of others or to act only for themselves, when residing in malarious localities. And it should not be forgotten that the lighting of large fires has been found beneficial in protecting men employed on the dangerous service of cutting wood, and may tend to dissipate the noxious vapours to which, under other circumstances, they may unavoidably be exposed. It is manifest that regard should be had to season of the year in planning marches or expeditions, with a view of selecting the most salubrious for such undertakings; and, in reference to this point, the effects of acclimation must be borne in mind, and the consequent advantage of bringing fresh troops to a new climate at the time of its least unhealthiness, so that they may become, in some degree, seasoned to its effects, before being subjected to its noxious influences in the months of their greatest power. If the interior of Africa is to be penetrated, it may well become a subject for deliberation, whether some better inlet might not be discovered than that which is offered by her pestiferous rivers; and it will be a duty, if men in authority are not indifferent to the waste of human life, that they who are employed on such missions, should belong to those dark races that are so well fitted to resist the perils of the country, together with as small a number of Europeans as may possibly suffice for securing the objects in view.

Good lodging, good clothing, and good diet—these are the chief general preservative means by which to exclude the predisposing causes of malarious disease. There must not be intemperance or excess, but the diet should be liberal rather than spare, including a due quantity both of fermented liquors and of condiments. At Walcheren a double allowance of spirits was made to those French soldiers whose duties on guard exposed them most in the open air; and Sir G. Blane speaks of this measure with approval. Pepper, also, as a seasoning for food, is considered to possess some protective power. As the general health and strength are to be maintained, so is any occasional depression of tone to be carefully avoided, especially when it is necessary to encounter more than the average risk of attack from this subtle agent. Hence labourers or others who are compelled to be abroad before daybreak and during early morning, should never go forth fasting. A substantial meal is a good defence in such cases; and the use of coffee is by some considered to have especial advantages. Covering the mouth and nose with a handkerchief or respirator, and recourse to smoking, are measures deserving a trial in all malarious districts whenever the circumstances are such as to make precaution necessary. A cheerful and hopeful state of mind is to be maintained or cultivated, as forming no unimportant part of that complete healthfulness which best enables the constitution to resist the exciting causes of disease.

The treatment of an actually existing intermittent fever is divided under two heads, viz., that which is applied immediately before or during the paroxysm with the view of preventing its occurrence or mitigating its severity; and that which is pursued during the intermission, with the intention of so affecting the system as to destroy the condition by which the fits are from time to time reproduced. Experience has taught us, in regard to the first plan of treatment, that the hinderance or mitigation of one paroxysm has a tendency also to hinder or mitigate those that follow; so that in some cases the mitigation and prevention of a few successive paroxysms puts a stop to the disease altogether. Experience has also shown us that there are certain medicines to which the epithet antiperiodic has been applied, which have a peculiar power of subduing regular intermittent diseases, and which seem to act upon the latent source of the recurring paroxysms. With regard to some of these last, however, it is matter of observation, that their efficacy is enhanced if given freely shortly before the expected recurrence of the paroxysm, rather than administered in more numerous doses distributed through the entire intermission. It is evident that the two plans of treatment may be combined in the same case; the object being by means resorted to during the paroxysm to get the patient safely and easily through it, and then to avail ourselves of the intermission for the exhibition of such antiperiodic remedies as may prevent its return.

Where the ague is of some standing, and the fits are mild, the patient may often be left to himself in them, and will suffer as little under the simple expedient of lying down and consulting his own feelings as to the amount of covering to be placed upon him as under more elaborate treatment. In other cases it may be desirable to have recourse to warm diluent liquids, fomentations, or bottles filled with hot water to the feet, pediluvium, or the more general remedy of a vapour bath. Putting the patient into a bath of this nature a quarter of an hour before the usual time of the coming on of the fever, and keeping him in it until the period of the cold stage has elapsed, has, in some cases, been found to effect a complete cure, even when he had before taken the cinchona bark in large doses without any good effect. These measures often failing, however, to put a stop to the fit, practitioners have sought more powerful and certain remedies. Dr. Trotter mentions, in his "Medicina Nautica," that, finding intermittents became very frequent on board the Vengeance, one of the channel fleet under Earl Howe, he was resolved to try the full effects of opium in preventing the fit. He reports, that the moment the sick felt the approach of an attack, they were sure to run to the cockpit for relief. A dose of tinctura opii was then administered: if the first dose did not bring on some warmth in the space of ten or fifteen minutes, from twelve to twenty drops more were given. He never gave less than thirty drops the first time, and never had occasion to go beyond sixty in the space of an hour; for in no case did the remedy fail, we are informed, to give relief in this time.

He further reports, that in a few minutes from the exhibition of the opiate an exhilaration of spirits was perceived, which was quickly followed by a relaxation of the surface, the countenance looked cheerful, and a flush was spread on the cheek. The pulse, from being weak, quick, and sometimes irregular, became less frequent, full, and equal; an agreeable warmth was diffused over the whole frame, and every unpleasant feeling vanished sometimes in a quarter of an hour. Sleep now and then followed a large dose; but this did not in general happen.

As soon as any symptoms indicated another paroxysm, whether on the following day or not, the tinctura opii was repeated in the same manner as in the former fit, and always with equal success; so that the patient seldom experienced much trembling or shaking. He adds, that the second paroxysm was commonly an hour or two later in the day than the preceding one; and that but few instances occurred where any indisposition indicated a third attack at the expected period of accession. The very patients themselves, he observes, were not a little surprised at the sudden change in their sensations produced by so small a quantity of medicine; and that they were certainly the completest cures which ever came under his observation.

In Dr. Lind we find an advocate for the exhibition of opium likewise in the hot fit. He tells us he has observed that, if taken during the intermissions, it had not the least effect, either in preventing or mitigating the succeeding paroxysm; when given in the cold fit, it once or twice seemed to remove it; but that when administered half an hour after the commencement of the hot fit, it generally afforded immediate relief. When given in the hot fit, he observed the following effects to ensue: — 1st, It shortened and abated the fit; and this with more certainty than an ounce of the bark was found to affect the disease. 2d, It generally gave a sensible relief to the head, took off the burning heat of the fever, and occasioned a profuse sweat. This sweat was attended with an agreeable softness of the skin, instead of the burning sensation which affects patients sweating in the hot fit, and was always more copious than in those who had not taken opium. 3d, It often produced a soft and refreshing sleep to a patient tortured in the agonies of the fever, from which he awaked bathed in sweat, and in a great measure free from all complaints.

The Doctor has always observed, that the effects of opium are more uniform and constant in intermitting fevers than in any other disease, and are there more quick and sensible than those of any other medicine. An opiate thus given soon after the commencement of the hot fit, by abating the violence and lessening the duration of the fever, preserves the constitution so entirely uninjured, that since he used opium in agues a dropsy or jaundice has seldom attacked any of his patients in those diseases. When opium did not immediately abate the symptoms of the fever, it never increased their violence; on the contrary, most patients reaped some benefit from an opiate given in the hot fit, and many of them bore a larger dose at that time than they could at any other. Dr. Lind offers it as his opinion, that opium in this disease is the best preparative for the bark, as it not only produces a complete intermission, in which case alone that remedy can be safely administered, but occasions such a salutary and copious evacuation by sweat as generally to render a much less quantity of bark requisite.

By administering an emetic immediately before the accession of the cold stage, we may sometimes be enabled to destroy the morbid catenation induced by the cause of the disease, and thereby prevent a return of the paroxysm; but this treatment is objectionable whenever there is much epigastric tenderness, or disposition to cerebral affection.

Mr. G. Dawson, in his "Observations on the Diseases of Walcheren," tells us, that he gave five grains of the subcarbonate of ammonia, with an equal quantity of camphor, and a scruple of aromatic confection, in cases of Walcheren intermittents, with greater success than any other medicines. The confectio opii, no doubt, would have been preferable to the other confection. Indeed, he acknowledges that he found it superior to opium or its tincture.

Might not the affusion of cold water be employed with some prospect of success two or three hours before the expected accession of the paroxysm, or immediately after the hot fit is completely formed? Indeed I have tried it, and with some advantage, in the former instance. The morbid catenation in these fevers has been broken by putting the patient under a copious shower-bath in the hot stage of the paroxysm.

On the authorities I have mentioned, we are induced to presume that we have a knowledge of powerful remedies for cutting short the cold fit of an intermittent; or, should the hot fit succeed, that it will certainly be rendered both milder and of shorter duration each time of its return. Should we, however, be disappointed in our expectations, and the febrile symptoms run high, we may then advise the use of gentle diaphoretics, in small and frequently repeated doses, as prescribed under the head of Simple Continued Fever, or below*; and to increase their effect, the patient must be directed to drink frequently of tepid diluting liquors. If there is any inflammatory diathesis, nitre may be added to these medicines. When there is much nausea, with vomiting, the stomach may be washed out with one or two basinfuls of camomile tea.

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* ℞ Succ. Limon. f. ℥ss.
Potassæ Carbon. ℈j. vel q. s. ad saturationem.
Aq. Menth. f. ℥j.
Antimon. Tartar. gr. $\frac{1}{12}$.

Syrup. ʒij. f. M.
Ft. haustus, tertiis horis repetendus.

* Take Juice of Lemon, half an ounce.
Carbonate of Potass, one scruple, or enough to saturate it.
Mint Water, one ounce.
Tartarized Antimony, the twelfth of a grain.
Common Syrup, two drachms.
Mix them for a draught, which is to be repeated every three hours.

If the patient be incommoded by a cough, attended with a pain in the side affecting the breathing, it may not be improper to take away a small quantity of blood. If the head becomes much affected, either during the paroxysms or intermissions, the application of leeches to the temple will be advisable, opiates being laid aside.

With respect to blood-letting, much controversy has taken place as to its propriety in intermittents. We have, however, the assurance of both Pringle and Cleghorn*, that in warm climates, and hot seasons, it is both a safe and proper practice, rendering the intermissions more complete, taking off the inflammatory diathesis, which counteracts the beneficial effects of cinchona, and removing those pleuritic and rheumatic affections, and those symptoms of congestion in the brain, liver, and spleen, which are often superadded to fevers of endemic origin. It has, indeed, been observed, that blood drawn during the hot fit of an ague frequently exhibits the buffy coat.

Blood-letting during the cold stage has been advocated by Dr. Mackintosh, but we believe that he has made few converts to his practice; this measure being considered occasionally unsafe, and very rarely, if ever, expedient.

To us it appears that extreme congestion in the cold stage, or excitement of the hot stage, may sometimes create a temporary emergency, suggesting blood-letting to such an extent as shall ward off the existing peril; that this emergency may rise to a necessity where there is inflammation within the chest or head, and that a plethoric or robust condition in the patient may remove all hesitation on the point. Nevertheless, if this measure can without hazard be delayed for a time, the practitioner will during the intermission, be better able to judge, with reference to the whole course of the disorder, whether it be desirable to bleed at all, and if so, to what extent.

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* See Pringle on Diseases of the Army, Cleghorn on Diseases of Minorca.

Vel,	*Or,*
℞ Liquor. Ammon. Acetat. f. ʒiij.	Take Solution of Acetate of Ammonia, three drachms.
Aq. Cinnam. f. ʒij.	Cinnamon Water, two drachms.
— Puræ, f. ʒv.	Pure Water, five drachms.
Vini Antimon. Tart. ♏xviij.	Wine of Tartarized Antimony, eighteen drops.
Syrup. Cort. Aurant. f. ʒj. M.	Syrup of Orange Peel, one drachm.
Ft. haustus.	Mix them for a draught.
Vel,	*Or,*
℞ Pulv. Ipecac. C. gr. vj. Capiat tertiâ quâque horâ.	Take Compound Powder of Ipecacuanha, six grains, repeating the dose every three hours.

Some authors advise that on the cessation of the paroxysm, and before commencing the administration of medicines proper for the intermission, an emetic should be given, if it has not been resorted to either shortly before or during the cold stage. We are not disposed to concur in the propriety of this practice, but shall proceed to detail that which seems to us advisable. Now, first of all, we must remark that it is a well known fact that in England, and during spring, many agues may be completely cured without any specific treatment at all; and again, that it is also well known that many agues which are apt at their commencement to be somewhat irregular in the recurrence and character of their paroxysms, are far more amenable to the influence of specific or antiperiodic remedies when they have assumed an exact periodicity under treatment of an antiphlogistic kind, such as would be appropriate to the commencement of fevers, whether continued or paroxysmal. In such cases, therefore, we have often found it expedient to begin our treatment with a brisk mercurial purgative, to be repeated on alternate days, exhibiting at the same time a mild diaphoretic medicine; and these we have not hesitated to give at regular periods, without regard to the occurrence or cessation of the fit. It will be found, in a majority of instances at least, that if the disease do not entirely yield, the paroxysms will become both milder and more regular, the secretions will improve, and any local slight congestions or inflammations will be relieved, or even entirely removed.

We give below* a form of purgative, which in many instances will be found to answer well, and one for a fever draught, and we proceed to speak of the modifications requiring sometimes to be made.

If there be much irritability of stomach†, a few grains of calomel

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* ℞ Pulv. Radic. Jalap. gr. xij. Hydrarg. Chloridi. Pulv. Zingib. ā. gr. iij. Misce. Fiat pulvis alterius auroris ex melle sumendus.	* Take Powdered Jalap, twelve grains. Calomel, Powdered Ginger, of each three grains. Mix for a powder to be taken in honey every other morning.
Vel, ℞ Liquor Ammoniæ Acetat. ʒiij. Vini Antim. Potassis Tart. ♏xv. ad ♏xx. Mistur. Camphoræ, ℥j. Syrup. Tolutan. ʒj. Misce. Fiat haustus ter die sumend.	*Or,* Take Liquor of Acetate of Ammonia, three drachms. Wine of Tartarized Antimony, fifteen to twenty minims. Camphor Mixture, one ounce. Syrup of Tolu, one drachm. Mix, and make a draught, to be taken three times a day.
† ℞ Hydrarg. Chloridi, gr. iij. Pulv. Zingib. gr. j. Pulv. Sacchari albi, gr. iij. Fiat pulvis alternis noctibus exhibendus.	† Take Calomel, three grains. Powdered Ginger, one grain. Powdered White Sugar, three grains. Make a powder, to be given every other night.

given over night, followed by a senna draught* on the next morning, may be substituted for the powder, and the antimony in the draught may be diminished in quantity, or omitted altogether.

If there be a looseness of the bowels†, a different powder should be given, and a few drops of laudanum added to each dose of the draught; from five to eight drops will be sufficient. When the tongue shall have become clean, and the dejections natural, the purgatives may be left off altogether, or be succeeded by milder laxatives; and when, too, the fits are more mild and regular, and the complications relieved, tonics in decided doses should at once be resorted to.

If the treatment here pointed out be considered inadequate, or is found on trial to disappoint our hopes, it is to be remembered that we possess in arsenic a medicine of great power in subduing diseases of this class, and suitable for exhibition often under circumstances in which bark or quinine is objectionable. Thus from three to five minims of the liquor potassæ arsenitis may be added to such a draught as we have prescribed, in those cases where inflammation of the brain or lungs require antiphlogistic measures of considerable activity. In this way we combine the specific treatment of the intermittent with the ordinary measures demanded by the disease, which complicates it without detriment to either object. Arsenic, too, has been found beneficial in those complicated cases where it might most be expected to disagree.

Thus, Sir Gilbert Blane, in his valuable paper on Intermittent Fever, published in the 3rd vol. of the "Medico-Chirurgical Transactions," expresses himself in the following manner when speaking of the Walcheren fever: —

"The greatest difficulty arose in curing these severe intermittents, from the great irritability of stomach, which rendered the exhibition of purgatives difficult; this was overcome by giving calomel, and assisting its operation by considerable quantities of carbonated magnesia given in effervescence with lemon-juice. The stomachs of some patients were reconciled to the bark by administering it with opium or magnesia in effervescence, or both; to others it was so insuperably offensive that it could not be borne in any form, quantity, or combination. In these cases the cure was effected by opium and arsenic, along with such bitters and aromatics as the stomach would bear. Where the periodical paroxysms had not ceased, from thirty to forty drops of laudanum were given a few hours before the expected seizure, accompanied by as much rhubarb as would counteract its restringent effects." *

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* ℞ Infus. Sennæ Comp. ʒx.
Magnes. Sulphat. ℥ss.
Tinctur. Sennæ Comp. ʒij.

Solve. Fiat haustus alternis auroris sumendus.

† ℞ Pulv. Radic. Rhei, gr. xij.
Pulv. Hydrarg c. Creta,
Pulv. Zingib. ā gr. iij.

Fiat pulvis alternis auroris sumendus.

* Take Compound Infusion of Senna, ten drachms.
Epsom Salts, half an ounce.
Compound Tincture of Senna, two drachms.

Dissolve. Make a draught, to be taken every other morning.

† Take Powdered Rhubarb, twelve grains.
Mercury and Chalk in powder,
Powdered Ginger, of each three grains.

Make a powder, to be taken every other morning.

Again, Dr. Wilson, in his "Medical Notes on China," published in 1846, writes as follows, at page 204.: —

"In cases where the fever was complicated with other forms of disease, especially with the flux, the difficulties found in the way of satisfactory treatment were great, if not insuperable. It generally happened that the distinctly febrile part of the disease, the ague fit, was more or less marked by the intestinal affection." He says a little farther on: — "The appropriate and potent remedy for the fever,— which, though not always unequivocally manifested, was so constantly in the system, exhausting its powers, inducing dropsy and other effects of debility,—could seldom be given beneficially, or even without marked injury, on account of the flux. Neither quinine or cinchona could be borne. Even simple bitter infusions, with or without aromatics, were seldom long tolerated; and it frequently happened that after the bowel affection was arrested, when such medicines were employed with the view of strengthening the alimentary organs, the flux with all its miseries returned in a day or two, the patient constantly asserting that the draughts disagreed with him from the first. In this dilemma, arsenic presented itself as the next in order of efficiency of the antiperiodic medicines, and the trial on the whole answered expectation. While acting favourably on the ague, it did not aggravate the flux; nay, it seemed beneficial to it also."

The sulphate of quinine is a remedy of great efficacy in intermittents, and has been found often to succeed where the bark has failed. It may be given to adults in the dose of from three to five grains, every four or six hours, and to younger subjects in the like proportion.

In cold climates, it will in general be advisable to wait for a perfect and regular intermission before we give the bark or sulphate of quinine; but in warm ones, where intermittents are apt to degenerate into continued fevers or remittents, and in which the habit is more irritable and weak, it will be right to administer them even on the most imperfect intermission or slightest remission.

In all cases of intermittents, it will not be sufficient that the recurrence of paroxysms be stopped for once or twice by a use of the bark or sulphate of quinine; a relapse is commonly to be expected, and it should therefore be prevented by a continued exhibition of either medicine at proper intervals; even for some weeks after the disease appears to be removed, it may be advisable to take a little occasionally, particularly in damp weather, or during the prevalence of an easterly wind.

There are some practical points requiring our attention in the treatment of obstinate agues in order to secure success. Some of

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* Medico-Chirurgical Transactions, pp. 24, 25.

these have been already adverted to; and we owe to Sir Robert Tabor or Talbor, according to Sir George Baker, the first knowledge of the most effectual use of bark. Tabor's plan, we believe, consisted in exhibiting it in large doses, and confining its employment to the intermissions. With quinine no less than with bark, where we have to treat an inveterate, or apprehend an obstinate disease, the dose should from the commencement be large, not less than five grains, for thus we may often produce results unattainable by much larger doses, if we have gradually ascended to them. It is, too, in the intermission that this remedy should be administered, or rather, where this is long, towards the end of the intermission, for thus shall we attain the benefits, and escape much of the inconvenience of its use.* Thus from three to six grains of quinine given every fourth hour till the fourth dose, on the day preceding the evening paroxysm of a quartan, and then omitted till the approach of the next, will be more effectual than the continuous use of the remedy in smaller doses throughout the intermission; and the same principle may be acted on in other types. A mercurial purgative administered intermediately will assist the specific action of the remedy, and tend to relieve the head from its troublesome effects. Where the disease baffles our first efforts, it may be well to alternate the use of quinine with arsenic, the latter being given in carefully regulated doses throughout both the paroxysm and intermission. It is not to be doubted that calomel exercises a beneficial influence in the cure of agues; it has been known to remove them entirely, and is often found a valuable precursor and adjuvant of other remedies. Dr. Baillie, in his Posthumous Works, gives the following account of his experience in this matter:—"I have known many cases in which bark alone would not cure ague, in all of which, when a grain of calomel was given every night for eight or ten nights, bark cured the ague in the course of a few days. This practice I learned from Dr. D. Pitcairn." "According to my experience," he adds, "arsenic cures agues sooner than bark, and produces no bad effect, if given in proper doses and not continued too long."

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* ℞ Quinæ Disulphat. gr. xxxvj.
Pulv. Capsici, gr. xij.
Mistur. Acac. q. s.
Misce. Fiant pil. xij., e quibus sumat j. vel ij. quartâ quâque horâ ad quartam vicem ante reditum imminentis paroxysmi.

Vel,

℞ Quinæ Disulphat. gr. iij. ad gr. vj.
Acid. Sulph. dilut. ♏jv. ad ♏viij.
Aquæ Piment. ʒxj.
Syrup. Zingib. ʒj.
Misce. Fiat haustus ut supra dandus.

Vel,

℞ Quinæ Disulph. gr. xv. ad ℈j.
Acid. Sulph. dilut. ♏xv.
Aquæ Cinnamom. ʒxv.
Syrup. ʒj.
Tinctur. Opii, ♏x.
Misce. Fiat haustus vel duodecim vel sex horis ante reditum paroxysmi sumendus. —*Dr. Van Buren.* Vel detur hic haustus intervallo unius tantum horæ ante minantem paroxysmum.

* Take Disulphate of Quinine, thirty-six grains.
Powdered Cayenne Pepper, twelve grains.
Mucilage as much as requisite.
Mix, and make into twelve pills, of which let one or two be taken every fourth hour till the fourth time, before the return of the impending paroxysm.

Or,

Take Disulphate of Quinine, three to six grains.
Dilute Sulphuric Acid, four to eight drops.
Pimenta Water, eleven drachms.
Syrup of Ginger, one drachm.
Make a draught, to be given as above.

Or,

Take Disulphate of Quinine, fifteen to twenty grains.
Dilute Sulphuric Acid, fifteen drops.
Cinnamon Water, fifteen drachms.
Syrup, one drachm.
Tincture of Opium, ten drops.
Make a draught, to be taken twelve or six hours before the return of the paroxysm. —*Dr. Van Buren.* Or, let this draught be given at the interval of one hour only before the expected paroxysm.

Quinine and arsenic are not the only antiperiodics that may be employed, though probably they are the most powerful of all. We prefer the form of pill for the first of these, as less liable to produce irritation of the bowels; and that of solution for the latter, as more safe. Dr. Macculloch, however, speaks of the administration of arsenic in powder, and states that he has known it to succeed in this way when it had failed in the other.

It would be a waste of time to enumerate all the medicines to which antiperiodic virtues, or the power of curing ague, has been attributed; especially as many of them have ill deserved the reputation which they have obtained.

Next in power to quinine and arsenic may be reckoned bark as given in powder, decoction, tincture, or extract, or in mixtures combining several of these forms. Dr. Pereira, in comparing the cinchona barks with each other, says, "Pale, red, and yellow (calisaga) cinchonas are the kinds which have been principally examined in this country; their pre-eminence over all others is now universally admitted." Among these three he gives a decided preference to the last. Formulæ for their administration are given below.* Salicine, the alkaloid of willow bark, has properties analogous to quinine, but, as we are told by the author just quoted, it is less liable to irritate the stomach. The dose is from ten to thirty grains, which may be given in powder mixed with sugar under the same circumstances and with the same frequency as quinine.

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* ℞ Pulv. Cinchon. cordif. ʒvj. ad ℥jss.

Pulv. Cinnamom. comp. ℈ij. ad ℈jv.

Misce, et divide in pulv. xij. æquales. Sumat j. quartâ quâque horâ ad quartam vicem, ante imminentem paroxysmum ex aquâ.

Vel,

℞ Pulv. Cinchon. cordif. ℥j.

Confection. Rosæ Gallicæ, ℥ss.
Acid. Sulphurici diluti, ʒj.

Syrupi Zingib. ℥jss.

Misce. Fiat electuarium. Dosis ʒj. ad ʒij. ter quarterve in die vel ut supra.—*Dr. Copland.*

* Take Powder of Yellow Bark, six to twelve drachms.
Compound Cinnamon Powder, two to four scruples.

Mix, and divide into twelve equal powders. Let one be taken in water every fourth hour to the fourth time, before the paroxysm comes on.

Or,

Take Powder of Yellow Bark, one ounce.
Conserve of Roses, half an ounce.
Dilute Sulphuric Acid, one drachm.
Syrup of Ginger, an ounce and a half.

Mix, and make an electuary. Dose, one to two teaspoonfuls three or four times a day, or as the last.—*Dr. Copland.*

Dr. Pereira mentions six species of willow as those most in repute for yielding barks possessing great bitterness combined with astringency, which qualities he considers the best proofs of their power. These are, SALIX RUSSELLIANA, *the Bedford willow;* SALIX ALBA, *the common white willow;* SALIX CAPREA, *Great round-leaved willow;* SALIX FRAGILIS, *the crack willow;* SALIX PENTANDRA, *sweet bay-leaved willow;* SALIX PURPUREA, *bitter purple willow.*

These willow barks may be administered in the same forms and combinations as the cinchonas.

Dr. Hartle*, writing from Port of Spain, Trinidad, mentions that intermittent fever is very common in that town and island, and that sulphate of quinine often failed to eradicate the malady, even when given in ten-grain doses frequently repeated. It therefore occurred to him that piperine would best succeed in combating the fits of ague, and that when that was accomplished, it might, in combination with quinine, succeed in removing the disease. In all cases of long standing, many of them with enlargement of the liver and spleen, he gave, as soon as the sweating stage was established, three grains made into a pill with mucilage every hour, till eighteen grains had been taken; and on the following day, when the intermission was

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* Edinburgh Med. and Surg. Journal, xlv. 98.

Vel,	*Or,*
℞ Extract. Cinchon. gr. xv.	Take Extract of Peruvian Bark, fifteen grains.
Decoct. ejusdem, f. ℥jss.	Decoction of the same, one ounce and a half.
Tinct. Cort. Aurant. f. ʒj. M.	Tincture of Orange-peel, one drachm.
Ft. Haustus, alternis horis sumendus.	Mix them, and let this draught be taken every other hour.
Vel,	*Or,*
℞ Corticis Cinchon. contus. ʒvj.	Take Powdered Bark, six drachms.
Radic. Serpentariæ, ℥ss.	Root of Serpentary, half an ounce.
Corticis Aurantii sicc. ʒij.	Dry Orange-peel, two drachms.
Aquæ, ℥xxjv.	Water, twenty-four ounces.
Decoque ad ℥xvj., et adde liquori colato ubi refrixerit Tinct. Cinnamomi, ℥j. Dosis, ℥jss. ad ℥iij.—*Dr. Copland.*	Boil down to sixteen ounces, and add to the strained liquor, when cold, one ounce of Tincture of Cinnamon. Dose, an ounce and a half to three ounces.—*Dr. Copland.*
Vel,	*Or,*
℞ Cort. Cinchon. contus. ℥j. Coq. in Aq. Font. Oj. ad Oss. Colat. adde	Take Peruvian Bark bruised, one ounce. Pure Water, one pint; boil it over a slow fire until reduced to half a pint, strain it, and when cool, add
Tinct. Serpent. Rad.	Tincture of Snake-root,
—— Card. c. āā f. ʒvj. M.	Compound Tincture of Cardamoms, six drachms of each.
Capiat cochl. iij. magna pro dos. sæpè per diem.	Mix them, and take three large spoonfuls for a dose several times a day.

complete, the same quantity every three hours. And as soon as the paroxysm was checked, he completed the cure by ordering a pill containing two grains of quinine, two of piperine, and one of blue pill thrice a day for some days. This author tells us that the piperine, although a powerful stimulant, carminative and febrifuge, does not the least affect the head, and is therefore taken more readily than quinine, which is on this account objected to by many. Of this remedy we have ourselves had no experience.

In the 63rd vol. of the same work, Dr. Douglas Maclagan has called attention to the virtues of the sulphate of bebeerine as an antiperiodic. This alkaloid is derived from the Bebeera, or Greenheart Tree of British Guiana, which is, according to M. Schomburgh, a species of the genus Nectandra, and has received from him the name of Nectandra Rodiei, in honour of Dr. Rodie, the original discoverer of its medicinal powers. This substance may be given either in pill or mixture, a few drops of dilute sulphuric acid being added in the latter case to effect its solution, as when sulphate of quinine is employed. In one case of quotidian ague, twelve grains given night and morning put a stop to the disease in about a week; and in several other examples, both abroad and in Great Britain, the use of this medicine has been followed by success. Dr. Golding Bird has employed it in a few cases, but those published by him were of a mild character, so as not fully to justify the high estimate which he seems to have formed of its powers. In one example of a perfectly regular quartan ague occurring in our own practice, twelve grains of this medicine, given three times within a few hours of the return of the paroxysm, failed to prevent its return, or to produce any marked abatement in its severity; whereas five grains of quinine, given thrice in the same manner before a subsequent fit, caused it to disappear altogether, the exhibition of quinine in diminished quantities being continued prior to the regular times of the return of several succeeding paroxysms. This ill success has caused us somewhat to distrust its powers, nevertheless we think it entitled to farther trial. It appears that the dose required is at least double that of an equivalent quantity of quinine, so that if, as stated, the price of the former be only half that of the latter, there is little saving to be effected by its employment. It is said to be beneficial in neuralgic affections, periodic headache, and other forms of marked ague.

We believe that cinchonine as well as quinine possesses some antiperiodic virtues, but it has not been very successful in our hands.

During my residence in the West Indies, I met with many cases that resisted the powers of cinchona, and that gave way to a use of quassia. Indeed, so sovereign a remedy was this found in intermittents, and so easy was it to be obtained, that it was pretty generally substituted, by all practitioners, for the cinchona, in common cases on the plantations. The best way of administering it is in the form of infusion. The angustura bark (cortex cuspariæ) is another remedy which has been often used with success. The oxyde and sulphate of zinc have received strong testimony to their febrifuge powers.

It often happens, when intermittents have continued a long time, that a scirrhosity of the liver or spleen takes place, which is vulgarly denominated an ague-cake. These complaints have been attributed to an improper use of the cinchona bark; but they evidently arise from the great quantity of blood which is thrown on these parts during the cold fit, which distends them, and so produces scirrhosity, and which we often find it difficult to remove, although a stop is put to the fever. In such cases it may be proper to join deobstruents with cinchona, as below.* If these do not answer, we must have recourse to mercury.† A small dose should be given every night, so as just to affect the mouth; but the tonic medicines are to be continued. If the patient cannot take this remedy internally, he must substitute its external use in the form of unction, rubbing into the groins about a scruple, if an adult, of the unguentum hydrargyri fortius every night at bed-time.

Mercury is, however, employed unsuccessfully in many instances of these enlargements, which have afterwards given way to other remedies. Two cases of enlarged spleen, which resisted the effects of mercury, although the salivary glands had been sufficiently excited, and were afterwards removed by the succus inspissatus conii, are recorded in the work of a late writer.‡

A combination of the arsenical solution with cinchona §, in sub-

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‡ Essay on Hepatitis and Diseases of India, by Charles Griffith, M.D.

* ℞ Pulv. Cinchon. ℥j.	* Take Peruvian Bark in powder, one ounce.
—— Rhei, ʒjss.	Powdered Rhubarb, one drachm and a half.
Sodæ Subcarbon. ʒij.	Subcarbonate of Soda, two drachms.
Syrup. Zingib. q. s. M. Ft. elect. cujus sumat cochl. min. ter quaterve in die.	Syrup of Ginger, as much as may be sufficient to form the whole into an electuary, of which take about a tea-spoonful three or four times a day.
† ℞ Hydrargyr. Submuriat. gr. j.	† Take Submuriate of Mercury (Calomel), one grain.
Confec. Opii, gr. iij. M. Fiat pilula, omni nocte sumenda.	Opium Confection, three grains. Form them into a pill, to be taken every night.
Vel,	*Or,*
℞ Pilul. Hydrargyri, gr. iij.	Take Mercurial Pill, three grains.
—— Saponis cum Opio, gr. ij. M. Ft. Pilula.	Soap Pill, with Opium, two grs. Form them into a pill, to be taken as the former.
§ ℞ Liquoris Potass. Arsenit. ♏iij—viij.	§ Take Arsenical Solution, from three to eight drops.
Decoct. Cinchon, f. ʒx.	Decoction of Peruvian Bark, ten drachms.
Tinct. Cort. Aurant. f. ʒij.	Tincture of Orange-peel, two drachms.
—— Opii, ♏v. M. Ft. haustus, ter in die sumendus.	——— of Opium, five minims. Mix these, and let the draught be taken thrice daily.

stance, decoction, or infusion, is likely, I think, to prove a valuable remedy in cases of obstinate intermittents, and where either of these medicines administered singly might fail.

During the fits of an intermittent, the patient's strength is to be supported by food of a light nutritive nature, such as preparations of barley, sago, panado, and the like; but when the fit is off, he may be allowed animal food, and a moderate use of wine. A change of air and situation has sometimes a happy effect in removing an intermittent, particularly if from a low marshy country to an elevated one. In autumnal intermittents, it has been found that the air of a city or large town is more favourable than that of the country, owing, most likely, to the great number of fires that are always burning. When none of the viscera are affected, cold bathing may be used with advantage.

As intermittents are very apt to return, the patient should carefully avoid all such causes as might produce a fresh attack. Should he be incommoded by a giddiness of the head, which is not uncommonly the case, even after a slight attack of this fever, it may generally be relieved by volatiles * and the bark in wine.

It is necessary that the practitioner be made acquainted not only with the nature and treatment of the diseases which are to come under his care, but also with such actions of the medicines which he employs as warn him that their longer use will be unproductive of farther good, or followed by serious injury to the patient. We quote from a paper by Dr. Blair, in the "Edinburgh Medical and Surgical Journal, for April, 1847," an account of some inconveniences arising from the free use of quinine, which demand a discontinuance of the medicine. "When quinine is prescribed for an adult during an intermission of fever, and about thirty grains have been taken within twelve hours, the ears of the patient feel as if muffled, some degree of deafness ensues, and gentle noises of various kinds (most generally thrilling, blowing, or ringing) are complained of as being heard in the ears. If the medicine has been pushed further than necessary, a feeling of enlargement of the head may

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Vel,	*Or,*
℞ Infus. Calumbæ, f. ʒxj.	Take Infusion of Calumba, eleven drachms.
Liquor. Potas. Arsenit. ♏v.	Arsenical Solution, five drops.
Tinct. Opii, ♏iv.	Tincture of Opium, four drops.
—— Cinchonæ C. f. ʒj. M.	Compound Tincture of Peruvian Bark, one drachm.
Ft. haustus, 4tâ vel 6tâ quâque horâ capiendus.	Mix them, and let the draught be taken every fourth or sixth hour.
* ℞ Mistur. Camphoræ, f. ℥iijss.	* Take Camphorated Mixture, three ounces and a half.
Spirit. Ammon. Aromat. ʒj.	Aromatic Ammoniated Spirit, one drachm.
Syrup. Cort. Aurant. f. ℥ss. M.	Syrup of Orange-peel, half an ounce.
Capiat. cochl. larg. ij. ter quaterve in die.	Mix them. The dose may be two large spoonfuls three or four times a day.

follow; also tremor of the hands, vertigo, confusion of thought, dimness of sight, and almost complete surdity. Except in some peculiar cases these symptoms subside within a few hours. I have known a few cases, wherein quinine was pushed far beyond this quantity without these phenomena following; but they are so constant, that for all practical purposes they may be considered as invariably consequent on the use of a certain quantity, and may be conveniently grouped and known under the name of cinchonism. I must add, however, that though it is probable I may have prescribed, during the course of practice, several thousand ounces of quinine in all varieties of doses from half a grain to half a drachm, and in all colours, and temperaments, and ages, I have never observed an alarming or dangerous symptom from its use. In the treatment of fever, short of cinchonism there is no safety against the return of the paroxysm. But it is quite unnecessary to push quinine beyond that point of saturation indicated by incipient cinchonism."

There is far more need in the case of arsenic than in that of quinine that the medical man should be aware of the first indications of its acting as a poison on the system, and be prompt in discontinuing its employment. As arsenic has a cumulative action, doses which have been borne for a time without inconvenience, if long persevered in, may give rise to distressing, and even dangerous consequences. Dr. Pereira gives the following abstract of the symptoms produced by the long-continued employment of small doses of arsenious acid. "Disorder of the digestive functions, characterised by flatulence; sensation of warmth or actual pain in the stomach and bowels; loss of appetite; thirst, nausea, and vomiting; purging, or at least a relaxed condition of the bowels, and griping; furred tongue, with dryness and tightness of the mouth and throat, or with salivation. The pulse is quick, small, and sometimes irregular; the respiration oppressed, and accompanied with a dry cough. Headache, giddiness, and want of sleep are frequently observed. The limbs become painful, feeble, trembling, subject to convulsions; occasionally benumbed, and ultimately paralysed. Sometimes an eruption makes its appearance on the skin, and now and then the hair and nails fall off. Swelling of the face and feet is not unfrequently observed. Sometimes redness of the conjunctiva and eyelids, followed by a cutaneous eruption, is the first symptom of the medicine disagreeing. At other times irritation of the stomach is the leading symptom." Any of the disorders here enumerated arising in a patient who was taking this substance medicinally, would make it prudent, if not imperative upon his medical attendant, at once to forbid its further use.

REMITTENT FEVER.

By a remittent fever is understood one of malarious origin, in which the febrile symptoms undergo considerable abatement, but do not entirely disappear in the periods between the paroxysms. It is to be considered as intermediate in its course and aspect between intermittent and continued fevers, and often scarcely distinguishable from these last; both its paroxysms and its remissions are very uncertain in duration and degree, so that it may have none of the regularity of the former, and a scarcely less equable course than the latter of these diseases.

Prior to an attack of remittent fever, the patient is usually heavy and languid, and is troubled with anxiety, listlessness, sighing, yawning, and alternate fits of heat and cold. On its accession he experiences severe pains in the head and back, intense heat over the whole body, with thirst, difficulty of breathing, and great dejection of spirits; the tongue is white; the eyes and skin appear yellow; there is a pain and sense of swelling about the region of the stomach; nausea, and vomiting of bilious matter, ensue; and the pulse is frequent and small.

After a continuance of these symptoms for a time, the fever abates considerably, or goes off imperfectly by a gentle moisture diffused partially over the body; but in a few hours it returns with the same appearances as before. In this manner, with exacerbations and remissions, it proceeds at last to a crisis, or is changed into a fever of a different type. In warm climates, the remission often occurs so early as the second day; but in cold ones, it frequently does not take place until from the fourth to the sixth or eighth day.

The accession of fever which has just been described is, however, the mildest form under which it ever makes its appearance; for sometimes severe delirium arises, and the patient dies during the first paroxysm; or the remission, perhaps, is scarcely perceptible, and is immediately followed by another paroxysm, wherein there is a considerable aggravation of all the symptoms. The heat of the body is greatly increased, the face highly flushed, the thirst excessive, the tongue is covered with a dark brown fur; respiration laborious, the pulse quick, throbbing, and tremulous, and delirium arises. In some cases there is great gastric derangement, or great disturbance of functions in some of the abdominal viscera. At the distance of some time, perhaps, another short or imperfect remission again takes place; but the symptoms return once more with redoubled violence, and at length destroy the patient.

The symptoms which attend a remittent fever are apt to vary according to the situation and constitution of the patient, and likewise the season of the year; and therefore it is impossible to give a certain detail of them; for sometimes those indicating a redundancy of bile predominate, sometimes the nervous are most prevalent, and at other times the putrid.

The endemic fever of Sierra Leone, by which so many lives have of late years been lost, is a true remittent. The symptoms which characterise its onset are, a sense of great fulness with pulsation in the præcordia, and violent pain in the region of the liver. In a short time evidences of a strong determination of blood to the head become apparent, and by this the patient is frequently carried off. If he survives, an enlargement of the spleen almost uniformly takes place, and this state of disease is accompanied by paroxysms of intermittent fever, not assuming, however, any fixed type.

Dr. M^c^William thus describes the kindred fever which proved so fatal to those engaged in the expedition to the Niger in 1841. The accession was seldom accompanied by any marked shivering; but there was usually a sensation of coldness. Headache, giddiness, intense heat of skin, urgent thirst, intolerable nausea, and difficult breathing soon followed. This last symptom was sometimes extremely distressing, and continued from one to four hours until relieved by spontaneous vomiting, or the occurrence of diaphoresis. Subsidence of febrile action in general followed in from three to six hours. The principal complaint, at this period, was from the disagreeable odour of the perspiration, particularly in those cases that subsequently proved fatal. The sweating continued till from eight to twelve hours had been occupied by the whole paroxysm. Then followed the remission, which, however, did not last long, a fresh accession occurring in from six to twelve hours, or being delayed occasionally for twenty-four, or in a few instances for forty-eight hours. These last cases invariably assumed afterwards a low malignant type. The accessions did not seem to observe any law of periodicity. They came on, disappeared, and returned at all hours of the day and night. If no material improvement was evident by the eighth or ninth day, the prognosis was most gloomy. The patient became weak, irritable, and exhausted, and extremely restless; the remissions were indistinctly marked, and the fever assumed a low asthenic form. Occasional symptoms of mental aberration would appear at this period, and the countenance was pale and shrunk. Local pain was seldom much complained of; indeed, with the exception of headache (often very slight) at the commencement of the paroxysm, there were several instances in which the patients expressed themselves as quite well throughout the disease, although it ultimately proved fatal.

Signs of improvement were more distinct remissions and longer intervals, and a natural expression of countenance. A copious flow of urine was also a very favourable symptom.

Of the contingent symptoms the most prominent were delirium, yellowness of the skin, and convulsions affecting various parts of the body; but there were neither petechiæ nor sudamina, nor was black vomit observed in any case. The earliest death occurred on the third, and the latest on the forty-third day, and by far the greatest number within three weeks of the attack.*

In no case did the fever break out before the twenty-first day from entering the river, or sooner than the sixteenth from commencing the ascent. It is probable, therefore, that the shortest period of latency of the poison was not less than sixteen, possible that it was not less than twenty-one days.†

The usual appearances on dissection are, congestions of blood in the liver and spleen, inflammations in the alimentary tube, a distended state of the venous vessels of the brain, and serous effusion into the cavities of that organ.

Dr. M^cWilliam says that in the fatal cases examined by him the mucous coat of the stomach was invariably softened. Softening of the mucous membrane and livid spots were found at the lower end of the small intestines, and the agminated glands of Peyer were distinct, and enlarged in three cases out of eight. The spleen was enlarged and softened in one case only; in the rest it was healthy, and the liver was larger than usual in only two cases.‡

A remittent fever is always attended with some hazard, particularly in very warm climates, in which it usually goes through its course in the space of five or six days; but in cold ones, its crisis is not usually effected until the twelfth or fourteenth. The shorter and more obscure the remissions are, the greater will be the danger; and each succeeding paroxysm is attended with more risk than the former. On the contrary, the milder the attack, and the nearer the fever approaches to an intermittent, the fairer will be the prospect of a recovery.

This fever, as well as the intermittent, is produced by marsh miasma (malaria), or the exhalations arising from stagnant water impregnated with the remains of vegetable substances, and is most apt to arise when calm, close, and sultry weather quickly succeeds heavy rains or great inundations. In warm climates, particularly as we approach the tropics, where great heat and moisture rapidly succeed each other, the remittent is a very prevalent type of fever, and often appears under a highly aggravated and violent form, prevailing epidemically. It is likewise often met with in low marshy situations, abounding with wood and water, from which miasms are consequently evolved, and is most apt to attack those of a relaxed habit, those who undergo great fatigue, and those who make use of a poor and unwholesome diet.

The predisposing and exciting causes, and preventive treatment being the same as for intermittent fevers, we must refer to the former article for a fuller account of them.

From the determinations to particular organs which take place in a remittent fever, and the marks of inflammation which are occasionally observed, on dissection, in the brain, stomach, and biliary organs, it would seem that bleeding is a necessary operation. In both cold and warm climates, and at an early stage of the disease, it will be proper to have recourse to it, where the patient is young and of a full plethoric habit, the pulse full and hard, the heat intense, the breathing difficult, or the head much affected with stupor or delirium: and in some cases it may be necessary to repeat the operation in a few hours, if the force of the circulation is not sufficiently diminished: but in warm climates in particular, if none of these symptoms are present, the lancet should be used with caution, or not at all, especially if the patient has been a resident therein for any length of time, and is not lately arrived from Europe.

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* Medical History of the Niger Expedition, pp. 132—137.

† Ibid. p. 186.

‡ Ibid. pp. 142—147.

In all protracted cases of this fever, under every climate, where the pulse is weak, but still the head much affected, the application of cupping-glasses to the occiput, or of leeches to the temples, and blisters, will be more advisable than venesection.

To assist in allaying the violence of the fever, it will be prudent carefully to remove and avoid every thing that might in the least contribute to increase it, such as too strong a light falling on the eyes, all noise and motion, and likewise any excess of heat. The patient is therefore to be kept perfectly quiet; the covering of his bed is to be light, and his chamber of a moderate temperature. To assist these means, he should be presented from time to time with some cooling acidulated liquor, such as lemonade, tamarind beverage, or a solution of the supertartrate of potass, or even cold water. Throughout the whole course of the disease, it will be advisable to change his body-linen, as well as that of the bed, frequently; to sprinkle his chamber often with vinegar, and to remove immediately whatever he voids by stool, keeping up a free ventilation. As in most cases there is a determination to the brain, the patient's head should be kept rather elevated, and being shaved, numerous folds of linen, moistened with vinegar and water, may be kept constantly applied to it: his feet may be immersed occasionally in warm water.

As nausea usually prevails at the commencement of the disease, it will, in all cases, be right to cleanse the stomach by giving a gentle emetic of ipecacuanha. The operation of this being over, the bowels may then be emptied by a cathartic, which will seldom fail in bringing off a considerable quantity of dark bilious matter. Stronger purges, by determining inwardly and increasing the irritability of the stomach, would be prejudicial; and therefore, to obviate costiveness in the course of the disease, it will be most advisable to do it by the medicines here prescribed*, assisted now and then with aperient clysters.

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* ℞ Potassæ Tartrat. ʒij.
Infus. Sennæ Compos. f. ℥jss.
Tinct. Sennæ Comp. ʒj. M.
Ft. haustus.

* Take Tartrate of Potass, two drachms.
Compound Infusion of Senna, one ounce and a half.
Compound Tincture of Senna, one drachm.
Mix them for a draught.

The necessity of carefully inspecting the alvine discharges in remittent fever cannot be too strongly inculcated, as it affords the best or principal index for the regulation of purgative medicines.

In this fever, as well as typhus icterodes, the chloride of mercury, alone or combined with rhubarb or jalap, may be regarded as a valuable remedy where we wish to carry off putrid feculent matter from the bowels, and there is at the same time any degree of nausea or vomiting present; as, from the smallness of its bulk, it may possibly be retained on the stomach when every other purgative might be rejected.

After these evacuations, and where there is no delirium present, an opiate will be found of great service in quieting the commotions induced either by the spontaneous or artificial discharges, and in enabling the patient to retain on his stomach both nourishment and medicines.

In the remittent fevers of warm climates, as well as of temperate countries, in the hotter seasons of the year, the best effects are to be derived from cold affusion, or throwing cold water over the patient; but it is to be understood that the height of the paroxysm is the proper time for the application of the remedy. The sensations of heat are then strong; the headache is violent, and delirium frequently runs high. By employing the remedy at an early period, we may be able either to arrest the disease quickly, or bring about an early solution of the paroxysm; or at the least we may, for the most part, so ameliorate its aspect, as that from an obscure remittent it will soon become an intermittent of a distinct and regular type. Where signs of congestion or irregular action present themselves in the abdominal or biliary system, and the disease is recent, it will be advisable, previous to having recourse to affusion, to premise proper evacuations.

In the progress of the disease, where much debility has arisen, sponging the body over with cold water and vinegar, together with an internal use of wine, may be substituted for affusion or immersion.

The general effects to be observed from affusion, where it can be practised with propriety, are a diminution of heat and anxiety, greater cheerfulness of countenance, improved recollection, tendency to sleep, the pulse becoming fuller and more uniform, and the skin moist, with now and then a distinct remission.

Vel,	*Or,*
℞ Pulv. Rhei, gr. x.—xx. Hydrargyr. Chloridi. gr. v. Syrup. q. s. M. Fiant pilul. iv. pro dos.	Take Powdered Rhubarb, from ten to twenty grains. Calomel, five grains. Common Syrup, as much as will form the mass; which divide into four pills, to be taken at once.
Vel,	*Or,*
℞ Hydrargyr. Chloridi. gr. v. Pulv. Jalap. gr. xv. M. Ft. pulvis.	Take Calomel, five grains. Powdered Jalap, fifteen grains. Mix them, and take them for a dose.

To alter the type of the fever, and bring the remissions into perfect intermissions, if possible, by promoting a gentle diaphoresis, it will be proper to give antimonials in small and frequently repeated doses. They may be prescribed as mentioned under the head of Simple Continued Fever, or as below [*]; and to assist their effect, the patient should take frequent small draughts of some tepid diluting liquor.

In cases, says Dr. McWilliam, in which the hot stage was disposed to be protracted, and the patient was weak, quinine was given with James's powder. Thus, six grains of quinine with four of James's powder, were administered, under these circumstances, three times a day. He says subsequently, brandy, wine, opium, and ammonia, were freely given when the pulse began to flag, and when the symptoms generally denoted depression of vital energy, and often with almost miraculous effect.[†]

Where frequent vomitings prevail, antimonials will not be proper. In their stead, we may direct the saline medicine to be administered so as that the effervescence shall take place in the stomach, with the addition of about ten drops of tinct. opii to each dose. Moreover, we may direct flannel cloths, wrung out in a warm decoction of camomile flowers and bruised poppy heads, with an addition of rectified spirits, to be kept constantly applied over the region of this organ. Sometimes leeches or cupping on the epigastrium should precede these measures.

Should these means fail in procuring the desired effect, a large blister or mustard poultice may be put immediately over the part, which will be found, in general, a very effectual remedy. The early application of a blister, even in cases where no great irritability of the stomach prevails, may in some instances be proper, as it will tend to check the determination to that organ. Blisters likewise prove serviceable in the latter stages of a remittent fever, when the pulse is low and fluttering, with insensibility or a disposition to coma. In such cases they may be applied between the shoulders or to the legs. Sinapisms of mustard may also be put to the soles of the feet.

Calomel alone, in a single dose of five or ten grains, or calomel with opium to the extent of two grains of the former and half a grain of the latter, given every second or third hour till the sickness is stopped, are among the means available for checking the irritability of the stomach. Where the vomiting is troublesome in the course of paroxysmal fever, Dr. Geddes recommends a grain of opium with a scruple of calomel, if the bowels be constipated, or the same quantity of opium with five of calomel, if they be

[†] History of the Niger Expedition, p. 197.

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[*] ℞ Pulv. Jacob. ver. gr. iv.
Camphor. gr. iij.
Confect. Rosæ, q. s. M.
Ft. bolus, 3tiâ vel 4tâ horâ sumendus.

[*] Take James's Powder, four grains.
Camphor, three grains.
Confection of Roses, a sufficiency to form them into a bolus or two pills, to be taken every third or fourth hour.

relaxed. In Dr. M^cWilliam's treatment of the remittent fever of the Niger, little benefit seems to have resulted from producing mercurial salivation. Dr. Geddes, too, places little reliance on this measure in subduing the paroxysmal fever in India; and Dr. Williams has shown its ill success in paludal fever generally.

When a severe vomiting has arisen, the patient ought to swallow as little drink as possible, and should only now and then just moisten his mouth and throat; for whatever reaches the stomach is sure to be rejected shortly, with considerable violence; and by these convulsive actions the disease is strengthened and the person exhausted. Under such circumstances it will be better to support the strength by administering clysters, composed of broths and other nutritious liquids, than to attempt it by giving anything by the mouth.

When the stomach is not in an irritable state, and every thing is retained readily, the patient is to be supported by food of a light, generous nature. During the remissions, a little wine may be mixed with it.

As soon as the fever shows a disposition to yield, and a perfect remission takes place, we ought to give the bark of cinchona in substance, and in such doses as the stomach will easily bear; and if about ten minims of the acidum sulphuricum dilutum are added to each dose, the effect will be increased. Should the cinchona in powder prove either disagreeable to the patient, or excite nausea, then the extract, or a decoction or infusion, must be substituted. If any of its preparations should occasion a purging, about five drops of the tinctura opii, or a drachm of the tinct. catechu, may be added to each dose, or we may employ quinine instead of cinchona.

There can now be no doubt that quinine is both more powerful in its effects, and more frequently available than any other preparation of bark; but if from choice or necessity any one should have recourse to either the decoction or infusion of cinchona, he will do well to act upon the practical hint given by Dr. Pereira, in his justly celebrated work on Materia Medica, when he says, "If the water employed in preparing the decoction or infusion be acidulated (with sulphuric or hydrochloric acid), the medicinal value of the preparation is greatly increased; for the acid decomposes the insoluble red cinchonic salts, and forms with the cinchona alkaloids a soluble combination. Alkaline solutions, on the other hand, yield less powerful, though highly coloured decoctions. They readily dissolve the red cinchonic and other acids, but they render the alkaloids insoluble."

In cold climates we may wait for a perfect and complete remission before we give the cinchona; but in warm climates we ought to administer it even on the most imperfect and short remission; and although it may not prove sufficiently efficacious to prevent a fresh attack at first, yet it will seldom fail to mitigate the subsequent returns of the fever, and will at last bring about a regular and perfect intermission.

In reference both to the superior efficacy of the treatment of paroxysmal fever by quinine, and the times and circumstances under which it should be administered, Dr. Geddes writes as follows in his "Clinical Illustrations of the Diseases of India," published in 1846, to which we have several times referred: —

"On looking at the general result, however, of the treatment of paroxysmal fever, before and after the use of quinine, as exemplified in the facts stated in considering the prognosis of the diseases, there is evidently a great saving of health and life, by trusting to this remedy in checking the return of the febrile paroxysm. It has been proved also by the author's experience, that no time need be lost in having recourse to its aid for this purpose. The exhibition of quinine can go along with that of any remedy for attendant symptoms; and inasmuch as the latter may depend upon or be aggravated by the febrile accession, this medicine must be considered as an auxiliary to any remedial means, even of a supposed discordant nature, which may be employed for the relief of such symptoms. Thus quinine has been combined with the treatment suitable to inflammatory, dysenteric, and other affections, and, by preventing the increased febrile action of the paroxysmal disease, it has tended in a material degree to the diminution and ultimate removal of all the accompanying morbid phenomena." *

The same author says, a little further on, "The degree of fever existing at the time, provided there was moisture on the skin, and the disease showed any decline from the acmè of the hot fit, did not interfere with the exhibition of this medicine, when the urgency of the case required its use. The usual quantity of quinine given at each time was three grains, and for the most part in a pill, at intervals of two or three hours; but where the period for its exhibition was very short, or occasionally, at the distance of an hour from the expected period of a paroxysm, five or six grains of the medicine have been given for a dose." †

It is during the period of convalescence, and for the prevention of relapse, that some of the preparations of Peruvian bark may be economically and not disadvantageously substituted for quinine.

The late Dr. Fowler found very beneficial effects from the use of arsenic in the form of solution in this fever, as well as in intermittents. From his report, published in the ninth volume of the "Medical Commentaries," it appears that he experienced its virtues from repeated trials made of it on himself, having been visited by several attacks of a remittent between the years 1786 and 1791. He took the solution as directed to be prepared under the title of liquor potassæ arsenitis, in doses of from eight to ten drops twice a day, and always experienced the curative effects of the medicine,

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* Pp. 176, 177.

† Pp. 177, 178.

during each period of its administration, to be very pointed and successful.

We are also informed by Dr. Ferrier*, that he has employed it in some very dangerous and tedious remittents, and always found it a safe and certain remedy. He observed that it generally lessened, if it did not suspend, the second paroxysm after its being exhibited, and it effected the purpose without producing the slightest disturbance in the habit. To an adult he usually gave five drops of the saturated solution every four hours, and seldom found it necessary to exceed this dose. The only sensible effects produced by it, Dr. Ferrier tells us, are the removal of the crust on the tongue, the appearance of a sediment in the urine, and an increased firmness of the pulse.

Probably it might be best to administer this solution combined with the cinchona, either in substance, decoction, or infusion. — See INTERMITTENTS.

Everything that may have a tendency to bring on a fresh attack of fever is carefully to be avoided during convalescence.

"The most important step in the treatment of African fever," says Dr. McWilliam, "is comprehended in the maxim of Celsus, 'Pessimum ægro cœlum est quod ægrum facit.' I have no hesitation in saying, that in most instances a favourable turn in the form of the fever, even in its earlier stages, will attend a speedy removal from the locality where the disease originated."

A change of air and situation is in all cases found to have a good effect in expediting the patient's recovery; and if the appetite does not return readily, he may take stomachic bitters joined to some mineral acid with advantage. — See DYSPEPSIA for these.

Gestation in the open air in wheel carriages is a remedy which has been strongly recommended by Dr. Jackson, towards the close of the bilious remittent fever of warm climates, as well as of all others which have arisen from infection; and he cites many instances which fell under his treatment and immediate observation, whilst he officiated as physician to the army, both on foreign stations and at home, in which it was employed not only with safety, but with the highest efficacy; particularly so in those where the diseased action had ceased, but where the healthy movement was slow. He observes, that although the good effects of gestation be in themselves conspicuous, they are at the same time much increased by ablutions, by an entire change of clothes, and by frictions, both before the journey is undertaken, and after it is finished.

In seasons and places where this fever is prevalent, it will be advisable, by way of preventive, to take a proper dose of the tinct. cinchonæ composita, about twice a day, but more particularly on an empty stomach in the morning. Quinine is a still more effectual preservative. Dr. Stanger, one of the few Europeans who escaped the fever which attacked those engaged in the Niger expedition, probably owed his escape to the use of quinine and camphor pills, which he took on the recommendation of Dr. Copland.

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* See the new edition of his Medical Histories and Reflections.

CONTINUED FEVERS.

FEVERS of this nature continue for several days with nearly the same violence, having evident exacerbations and remissions daily.

SYNOCHUS, OR SIMPLE CONTINUED FEVER.

SYNOCHA and typhus, blended together in various degrees, seem to constitute this species of fever, as has before been observed; the former being apt to preponderate at its commencement, and the latter towards its termination. It becomes contagious where cleanliness and a proper ventilation are neglected, and is of more frequent occurrence in this country than any other kind of fever.

"There is but one simple continued fever known in this country, and that is caused by the agency of the typhoid poison." Thus writes the late Dr. R. Williams in his "Treatise on Morbid Poisons,"* and this opinion we believe to be both just and generally received by recent British authors, so far at least as the distinctions between synochus and typhus are concerned. This, indeed, is no other than the opinion of Cullen himself, who says, in his "First Lines," "The most common form of continued fevers in this country seems to be a combination of these two genera (the inflammatory and nervous fevers), and I have therefore given such a genus a place in our nosology under the title of Synochus. At the same time I think that the limits between the synochus and typhus will be with difficulty assigned; and I am disposed to believe that the synochus arises from the same causes as the typhus, and is therefore only a variety of it."† Dr. Bateman, too, in his "Succinct Account of the Contagious Fever" of this country, quotes the following passage of Dr. E. Percival's "Medical Reports on the Epidemic Fevers of Dublin," as expressing his own views on this subject. "Those who are most familiar with the aspect of fevers on a large scale will be least disposed to divide them into genera. The resemblance, or rather the convergency, of typhus mitior and synochus, are at least as palpable as the same relations between typhus mitior and typhus gravior. Each of these species commences with some inflammatory diathesis or congestion, each may decline with stupor, sub-delirium, and death; and the appearances on morbid dissection complete the analogy. They occur, besides, indiscriminately in the same family. Among six persons affected with fever in the same habitation, it is more than probable that a specimen of each form will be exhibited. Neither do the mildest nor the severest species propagate merely their own forms, but rather seem to generate each other promiscuously, without any known rule."*

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* Vol. i. p. 27.

† Fourth Edition, i. 69.

The different characters, then, upon which has been founded the separation of continued fevers into synochus and typhus, or into the endless forms of inflammatory, nervous, putrid, adynamic, ataxic, and so forth, are indicative of no essential differences in the nature of the fevers themselves, but depend probably on the more or less energetic operation of the exciting cause, farther modified by varieties of individual predisposition, and by general atmospheric influences. A similar variety in its features may be impressed upon any one of the exanthemata, without affecting the identity of the disease. Contagious continued fevers have indeed many points of resemblance to the acknowledged exanthemata, such as measles and scarlet fever; and a question arises, wholly different from that just discussed, namely, whether in respect of the cutaneous eruptions they display, and the laws which they observe, they can be properly included in one order, or whether they require to be separated into two or several, as distinct as measles and scarlatina are universally allowed to be, although they were long undistinguished from one another. On these questions we shall presently offer some remarks. We proceed now to speak of synochus, or simple continued fever, as that general form of which typhus is a modification or variety.

An attack of synochus is generally marked by the patient's being seized with a considerable degree of languor or sense of debility, together with sluggishness in motion, and frequent yawning and stretching; the face and extremities at the same time become pale, and the skin over the whole surface of the body appears constricted: he then perceives a sensation of cold in his back, passing from thence over his whole frame; and this sense of cold continuing to increase, tremors in the limbs, and rigors of the body, succeed. With these, there is a loss of appetite, want of taste in the mouth, slight pains in the head, back, and loins, and a small and frequent respiration.

The sense of cold and its effects after a little time become less violent, and are alternated with flushings, and at last, going off altogether, they are succeeded by great heat diffused generally over the whole body; the face looks flushed, the skin is dry, the tongue is foul; universal restlessness prevails, with more or less pain in the head, oppression at the chest, sickness at the stomach, and an inclination to vomit. There is, likewise, great thirst; and the pulse is full and frequent, beating perhaps, 90, 100, or 120 strokes in a minute. The rest is disturbed from the beginning; the patient appears to dream, and is said perhaps to wander in his sleep, and subsequently actual delirium comes on, at first only during the night, but at a later period continuing in the day also.

In this fever, as well as most others of the continued kind, there is generally an increase of the symptoms towards evening, say about six or seven o'clock: and, however restless the patient may have been through the night, he will generally obtain some rest or relief from his complaints soon after daylight.

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* Bateman, p. 24.

There are many symptoms at the beginning which are common to synocha, or the first stage of synochus, and to some of the phlegmasiæ. The very term inflammatory fever is indicative of this. It marks a resemblance between the pyrexia of this disease, and that of inflammation. The quick pulse, and the hot skin, and the thirst, are common to both diseases. It is the absence of the ordinary symptoms of primary affection of any organ which in great measure distinguishes them; for we believe, as Cullen believed, and as it is generally believed in this country in the present day, that the local affections arising in fever are superadded, and not essential to it. This opinion we shall presently endeavour to support by argument. We now return to our position, that the absence of the local symptoms of organic affection does furnish negative grounds of distinction between fevers and inflammations. Now, as regards affections of the chest and abdomen, the difference between fever and ordinary inflammation is for the most part distinctly marked; and this may arise from two causes, first, that the inflammations or local affections which complicate fever are not quite identical with those which occur independently; and secondly, that it seems to be a property of fever to render in some degree latent the mischiefs which may exist in particular organs. Be this as it may, it is matter of observation that the cough, difficulty of breathing, pains or purgings, which accompany fever, are trifling compared with those respectively attending bronchitis, pneumonia, pleurisy, dysentery, or diarrhœa, of even moderate severity.

But how are we to distinguish the absence of inflammation, or organic affection of the brain or its membranes? This we allow to be the most difficult point in the diagnosis of fever, and the point on which errors — and we are disposed to say not inexcusable errors — are sometimes committed. We shall endeavour to bring forward some symptoms, or modifications of symptoms, which may weigh on one side or the other in determining this most important question, viz., whether the disease before us be fever, or be inflammation within the head; or whether, being originally fever, inflammation within the head has supervened. Now, as regards the differences between fever and inflammations generally, there is in the former a more marked preliminary stage of depression, accompanied by more manifest chilliness or shivering; the thirst arises earlier and is greater, and the loss of appetite is more absolute; it does not appear as though distress or pain superseded the desire of food, so much as that there is a positive distaste for and loathing of it. The appearance of the tongue, too, is different; it is foul and loaded, rather than whitened and rough, which latter condition is more usual in inflammations, at least in those of the head or chest. The pulse also is different; being constantly more soft and feeble in the former than in the latter class of diseases. There is, even during reaction, more debility with the excitement. Thus Dr. Alison observes, that the pulse has very generally, from the commencement or early in the disease, less strength or resistance to compression than in the fever which usually accompanies simple and decided inflammation, at the same period after the attack. The increase of temperature is more equably diffused, not confined to or more marked in particular parts, as on the head in phrenitis, over the affected lung in pneumonia, or over the abdomen in peritonitis. The beating, too, of the carotid and temporal arteries, is less marked than in cerebral disease, and there is less of the ferretty injection of the eyes. The expression of the countenance in fever is different and peculiar: there is a look at once of anxiety and languor; there is a general lassitude and feebleness, which renders the gait unsteady if the patient attempts to walk: even the tongue is often protruded tremulously. The prostration of muscular power is more sudden and greater in fever than in any acute inflammatory disease. We regard pain in the head as a symptom of doubtful import; it is often absent altogether in cerebral disease, as shown by Andral, as well as in fever: nevertheless, it is apt to be more frequent, more severe, and more continuous in the former than in the latter. The occurrence of delirium is not distinctive between the two disorders; it is observed earlier in fevers than in other affections, but there is in the character of the delirium much to assist our judgment. Dr. Alison describes that of fever as unattended with propensity to violence, and more or less blended with or graduating into stupor, and hence generally designated as low, or muttering. There is in it a want of coherence, a disjointedness, resembling the broken wanderings of a person half asleep. The delirium of cerebral disease is more lively and more consistent; the mind is occupied with its own erroneous impressions, but the train of thought is clear and unbroken, and its expression is complete. There is more energy, not only in the delirium, but in the manner, in the posture, in the movements, of the sufferer from cerebral inflammation. He can often lie upon his side and raise himself in bed, or turn at pleasure, or put forth his arm, at a period when such achievements are impossible to him struck down by fever. We have already spoken of the differences in the pulse; there are differences also in the capillary circulation, which give a more vivid tinge to the flush accompanying phrenitis, a somewhat dusky and slightly puffed appearance to the features in fever.

There are two other differences, as remarked in the effect of remedies, which tend to decide the question of the nature of the malady before us. The one is that pointed out by Dr. Marshall Hall; the other has not, so far as we know, been generally insisted on. The tolerance of bloodletting is the test suggested by Dr. Hall, and we see no objection to its application in the manner recommended by him. He has said, and we believe truly, that if a patient in an erect position be bled from the arm, he will, if under the influence of fever, give indications of faintness after a very small loss of blood; but that if he be labouring under inflammatory cerebral disease, he will bear a large detraction without any failure of the pulse. Averse as we are to venesection in fevers, we do not think any injury likely to arise, if the operation is performed in this manner. Our only distrust of this criterion arises from the fact, that in some inflammations, and probably in all, a patient will in a first bloodletting be soon threatened by syncope; whereas the same patient, in a second bleeding, after the lapse of a few hours or a day, will bear a much larger loss of blood without exhibiting the like tendency. If this be so, it is clear that the medical attendant might be deceived, instead of instructed, by the result of his experiment.

The other test, not generally spoken of, but founded on experience, is derived from the effect of purgative medicines. Whatever the condition of the bowels as regards their spontaneous action, whether they be constipated or relaxed, it will invariably happen that in fever, uncomplicated by head affection, purgatives will operate with an energy at least equal to that which they are wont to exert on the individual in health; whereas, if there be present considerable oppression of the brain, whether congestive or inflammatory, they will be found comparatively inert. Of a similar resistance to the power of purgatives the instances are most numerous, both in the threatened hydrocephalic attacks of children, and in paralytic and apoplectic seizures of adults; and we believe that the torpid state of the bowels so often associated with these, is much more commonly an effect than a cause. Like other effects of any existing evil, it may in turn conduce to the aggravation of that evil, as serous effusion in the lungs or cavity of the thorax enhances the primary distress accompanying the cause from which itself has sprung.

Dr. Jenner has said that the headache of encephalitis is wont to continue, while that of uncomplicated fever always ceases before the appearance of delirium. Some or all of the differences here pointed out will serve the purpose of distinguishing the first stage of synochus from primary cerebral inflammation; the unmixed fever from that upon which cerebral inflammation has supervened in the first week or ten days from the commencement of the malady. In a more advanced period of the disease the head affection that is wont to arise is more of a congestive than inflammatory character, and is marked by more or less of coma gradually or suddenly arising without any preceding indications of excited cerebral circulation.

At very various intervals from the time of the attack, according to the character of the prevailing epidemic, and the age and constitution of the patient, either by insensible degrees or sometimes all at once, the symptoms of debility become very urgent; the pulse is extremely rapid, soft, and feeble, sometimes irregular or intermitting; the tongue is dry, it may be red and chapped, or covered over, as well as the teeth, with a thick black crust; the skin may still retain its heat, or be natural in temperature, or somewhat profuse perspirations may indicate its relaxed condition. And now it is that various cutaneous eruptions are wont to appear, of which we shall presently speak more in detail. If there be petechiæ and vibices, and thus a tendency to hæmorrhage be shown by the condition of the skin, we may apprehend its occurrence from the mucous membranes also. Sometimes there is bleeding from the nostrils; we have known the urine to be impregnated with blood: we read of blood exhaled from the mucous membrane of the lungs; but much more frequently it is from the bowels that its escape is to be dreaded. Hæmorrhage from the bowels may be trifling, or considerable in amount, so as greatly to add to the peril of the patient, or to bring his life at once to a close. It may be owing to ulceration, or it may be the result of exudation independently of ulceration; and, on the other hand, there may be, and very often is, ulceration of the intestines without any hæmorrhage from them. But there may be none of these hæmorrhages, not even petechiæ, or only these, and yet the patient may be lying in a state of extreme debility and danger. There may be looseness of the bowels—there seldom is very urgent diarrhœa; and there may be distension of the abdomen, with or without tenderness over its right side or elsewhere; while all the time there is an absence of sleep, a muttering delirium by night and during much of the day also, and at times picking of the bed-clothes and twitchings of the muscles, and then perhaps hiccup, and motions passed unconsciously, and soon after death. In some cases a viscid mucus collects about the throat and back of the nostrils, and this, together with the stiffness of the black crusted tongue, makes deglutition difficult; or even without these impediments the power of swallowing may be lost, as a result of the extreme depression of force throughout the system. Death may thus arise from debility alone, without the predominant derangement of any individual organ having been observed during life, or made known by examination after death.

Dr. Corrigan, in a clinical lecture published in the "Dublin Hospital Gazette for the 15th March, 1846," cites the case which he had just described, and which his auditors had witnessed, as one which was fatal without local disease:—"It is necessary," he remarks, "to have impressed firmly on the mind what this case teaches us,—that there is essentially no local disease in typhus fever, or, perhaps, more correctly speaking, that typhus fever is not a local disease; that the symptoms which form the most remarkable characters of the disease are not the effects nor the symptoms of local disease. This will explain to us a remarkable feature in fever in which we see no structural local disease, namely, the sudden recovery of a patient, his sudden transition from an apparently dying state to almost perfect health."

But while such cases as this illustrate one mode of death in fever, and demonstrate the fact that fever is independent of local inflammation, even when the two coexist, in more numerous examples it must be admitted that the local affections which complicate fever both modify its course during life, and determine the manner of the fatal event, which they greatly contribute to bring about. Dr. Alison has well described the various sources of death in fever as, "1st, The death by coma, referable partly to the peculiar action of the cause of fever on the brain, but partly also to increased determination of blood thither, or inflammatory action or effusion there. 2d, The death by suffocation (or apnœa), referable partly to the enfeebled state of the circulation, and want of power in the heart to propel the blood through the lungs, but partly also to bronchitis or pneumonia. 3d, The death by mere weakness, referable partly to the deleterious effect of the morbific cause on the circulation, but frequently also in part to various local inflammations prolonging the febrile state, and especially to the inflammations and ulcerations in the mucous membrane of the intestines, which appear to have in this as in other cases a peculiar sedative effect on the heart's actions."*

In addition to these unfortunate terminations, which may be viewed as primary results of fever, or of its complications, we have yet other two that appear as secondary consequences either of one of its complications or of its depressing influences. Thus we may have in an advanced stage of fever, generally towards the conclusion of its course, and sometimes when convalescence seems to have commenced, a sudden change which at once dooms our patient to the grave. This change consists in an attack of acute pain in the abdomen, with rapid distension and tenderness, generally followed by vomiting, collapse of the features, extremely small quick pulse, the utmost prostration, and speedy death. These symptoms show too surely that perforation of the instestines has taken place. In yet other cases, and at a still later period, sloughing sores on the sacrum or hips, exhaust the little vigour which has survived the attacks of the disease. These possible sequelæ of fevers should always be present to the mind of the physician, and engage his care with a view to their prevention; lest, in the moment when he has well nigh attained a successful issue, they come as fresh enemies to baffle all his hopes. In certain localities and seasons erysipelas, following in the train of continued fever, has carried off many of the convalescents.

In a majority of instances, though in very different proportions in different epidemics, a more fortunate termination awaits the care of the medical attendant. In these, after the malady has for a time run on in an uninterrupted course, there arises a manifest improvement in the symptoms; the aspect of the countenance alters for the better, the pulse becomes firmer and less frequent, the tongue less uniformly dry, cleaner, and more moist at its edges, the delirium abates, and there are intervals of refreshing sleep, while the skin too becomes more soft and natural. At times this amelioration takes place by slow and almost imperceptible degrees; we have seen it ensue upon sleep procured by opiates. Sometimes it accompanies or follows some sudden evacuation, it may be of blood from the nose, or of perspiration from the surface of the body; some looseness of the bowels, or loaded state of the urine, which is often observed under such circumstances to throw down a copious sediment. These events were wont to be called critical, as deciding the course of the disease; but it may well be doubted whether most of them are not effects rather than causes of the improvement which appears with them; and certain it is that no expectation of good can be deduced from any of them unless at the same time there be those surer marks of amendment which we have noted just above. That there is in simple continued fever a spontaneous tendency to terminate in health, is a generally admitted fact; and this is a particular in which it differs from ordinary inflammations of severe degree, and approaches nearly to the class of eruptive diseases. But although this tendency is acknowledged, the period at which it is wont to manifest itself has given rise to great diversity of opinion. Thus the belief that fever showed a greater disposition to undergo a favourable change on some days of its course than on others, is of very ancient date, — as old, indeed, as the time of Hippocrates. These so-called critical days were the third, fifth, seventh, ninth, eleventh, fourteenth, seventeenth, and twentieth, and the fourth and sixth were considered secondarily critical. Dr. Christison cites a table of observations made by Dr. Welsh during the Edinburgh epidemic of 1819, from which it appears that out of 690 cases, in 470 the crisis took place on one of the critical days, in 52 on the subsidiary critical days, and in 108 only on the days which are considered non-critical.

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* Outlines of Pathology, p. 444.

In the peculiar epidemic which raged in Scotland in 1843, and which, from the circumstance of its consisting of two, and in rare cases of even more successive attacks, separated by an intermission of several days, has been designated as relapsing fever and relapsing synocha, the crisis by perspiration of the first attack was observed, by Dr. Jackson of Leith, to fall upon the eighth, a non-critical day, in 98 out of 300 cases, and in 20 only to occur on the fifth[*]; while Dr. Seaton Reid remarks of the same fever, which raged in Belfast in 1844, that among 385 patients more than double the number of crises occurred on the fifth than on any other day.[†] So great are the discrepancies as to the particular phenomena of the same disease, as modified, perhaps, by changes of locality or other circumstances, and noted by different observers.

The duration and course of fever have been commonly divided into three periods or stages, some taking time as the chief guide in distinguishing them, and considering each of about equal length, so that in an epidemic whose full term might be reckoned twenty-one days, each stage would continue for about a week. Dr. R. Williams, however, has taken the indications of the tongue as his ground of determining these arbitrary but useful divisions, considering the first stage as marked by the tongue being coated with a white or yellowish mucus; the second as commencing by the formation of a central line of dark vitiated mucus, gradually extending over the whole upper surface of the organ, which at the same time almost universally becomes dry, and sometimes chapped; while the third stage is marked by its cleaning, and again becoming white, the sure indication of the patient's recovery, or else by its continuing black or brown, which beyond a certain period is the almost sure premonitor of death. These stages, he adds, are sometimes of equal length, but more frequently they are of unequal duration, and even one or more of them may be altogether wanting. These different conditions of the tongue, although not indicative of any given organic or functional lesion, either of the brain or of the alimentary canal, usually accompany states of the pulse and other symptoms which are very expressive of the varying condition of the patient. Thus in the first stage the pulse is generally full and regular, not exceeding 90 or 110, and the patient is in no immediate danger. In the brown tongue stage the pulse is small, and its frequency increased, say to 120 or to 130, and the disease is grave. In the third stage the pulse either abates in frequency and gradually returns to its natural standard, or else becomes almost countless — a mere vibration, and in this state the patient's case is generally hopeless."*

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[*] Edinburgh Medical and Surgical Journal, lxi. p. 421.

[†] Dublin Quarterly Journal, Nov. 1849, p. 29.

Now we may have recovery take place in the mildest examples of this fever without the disease having passed into the second or brown tongue stage, the first only having been more protracted than usual; so that, but for the character of the epidemic during which they arise, and other circumstances connected with their origin, they might not be known as cases of synochus at all. Or again, we may have other mild instances in which a second stage of moderate severity is succeeded by a third, the immediate harbinger of returning health; while in others the peril may have been greater, and a more protracted struggle may yet have terminated favourably.

We may remark that in recent authors, some of whom, as Dr. Ormerod and Dr. Jenner, have bestowed much pains upon the analysis of cases of continued fever, we find little or no allusion to the occurrence of crises, or to the existence of critical days, as those on which convalescence is prone to commence. And we would farther observe, that both the gradual invasion of the disease in not a few examples, and the gradual manner of the recovery in very many, oppose serious obstacles to precision in the determination of the exact day in the course of the fever on which the first improvement takes place. Dr. Ormerod, indeed, remarks generally, that nothing can be more difficult than to say, in any one case, at exactly what time the patient began to recover.† It is easy to see how any one so disposed may, by a little humouring, make the presumed or real commencement of amendment, in the majority of instances, fall on some one or other of a set of days, which, taken altogether, were little less numerous than those that were non-critical. We believe, however, that the admission of critical days, according to the ordinary manner of fixing them, was based upon and tended to perpetuate a false analogy between continued and paroxysmal fevers; and that all modern research, together with a consideration of the cutaneous eruptions wont to appear in the former, afford juster grounds for separating them from these and connecting them more closely with the exanthemata.

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* Morbid Poisons, i. 58, 59.

† Clinical Observations on Fever, p. 30.

Death in simple continued fever very rarely occurs in its primary stage before the expiration of the first week. Of forty-two cases treated by Chomel, one alone was fatal in that period. In one case recorded by Dr. Ormerod, originally believed to be one of continued fever, even after the disease had run its course, and a post-mortem examination had been made, the death which occurred on the fifth day was subsequently, with greater show of probability, referred to scarlet fever. The case well illustrates what we have already pointed out, the great uncertainty, in some instances, of early diagnosis of the particular form of febrile disease that is under observation. We borrow from this author his clear and concise general sketch of the times and causes of death in this disease. "Of death following upon the first accession of the general symptoms, during the first weekly period, I have not the means of speaking generally. Coma is the condition into which most of the cases which terminate fatally before the end of the second week pass; this corresponding to the usually early development of the cerebral symptoms. The pulmonary complications are generally said to be the next to prove fatal, by apnœa, and then follow, from affection of the bowels or other causes, those who sink under sheer exhaustion. But this statement is not strictly true of the cases here detailed; death by exhaustion appears among the deaths by coma before the end of the second week, and death from affection of the lungs is scattered up and down throughout the list of deaths by asthenia. All this, it should be observed, is of general, not of particular application." *

The cutaneous eruptions occurring in the course of continued fevers have, especially of late years, engaged considerable attention; and attempts have been made to found upon them distinctions not only with regard to the severity, but also to the nature, of the maladies which they accompany. It is only of late years that it has been an object of study to ascertain their several aspects, the times of their appearance, and the laws of their course. Up to a recent period they were wont to be somewhat indiscriminately comprehended under the term petechiæ; and it seemed enough to note the fact of their appearance without adverting to the day or stage of the continued fever in which they had their commencement, full development, or decline. After making the utmost possible allowance for oversights, and conceding that cutaneous eruptions may have existed in many instances in which their presence was either unrecognised or unrecorded, it will, we conceive, remain as a fact, that in many epidemics their occurrence forms a rare exception to the general rule, while even in those in

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* Clinical Observations on Fever, p. 31.

which they are most prevalent there are always not a few individual examples in which they cannot be detected. Dr. Bateman testifies their occasional infrequence when he writes that "the appearance of petechiæ, which had been at all times a rare occurrence in the fevers treated in the House of Recovery, was seldom noticed in the epidemic of 1818, only 9 cases out of 678 having exhibited that efflorescence."* Dr. Stoker, however, a few years earlier, met with petechiæ in 386 out of 540 patients received into the Cork-Street Hospital in Dublin; and Dr. Tweedie states the petechial eruption to have been almost invariably present in the patients in the London Fever Hospital in 1832. Of the 52 cases of fever analysed by Dr. Ormerod, there were 17 in which cutaneous eruptions were sought for in vain.† Now these facts give much countenance to the opinion long prevalent, that these eruptions are epiphenomena, or accidents of continued fever rather than integral parts of the disease itself. Accordingly we find Dr. Chambers, in his lectures published in 1828, describing the skin in continued fever as hot and dry, and in severe cases often covered with an exanthema about the neck and breast and joints of the limbs.‡ Dr. Tweedie alludes to a hæmorrhagic action manifesting itself in other parts, and also in the skin, as not unfrequent in cases of typhus gravior, and associated with vibices. These spots, rightly designated as petechiæ, appear to be the result of passive hæmorrhage, and probably differ from those so generally observed in the Irish epidemic by Dr. Stoker, and in the English one of 1832 by himself, since he does not notice any extraordinary character of malignity, or even of severity, as pertaining to the fevers accompanied by petechiæ in the latter case.§ Dr. Bateman says of the petechiæ, in the few cases in which he remarked them, that the circumstances which gave rise to their appearance were not obvious, but that they did not seem to indicate any particular severity or danger.‖ Other authors, as Dr. E. Percival, in his account of the fevers of Dublin in 1813–15, observes that most of the children from the Bedford Asylum (where they had been subjected to undue and excessive crowding) exhibited minute dusky petechiæ on their trunks and extremities, but that these spots disappeared commonly in forty-eight hours after they had been submitted to the purgative discipline and cool wards of the hospital.¶ Here, then, we have assigned, at least by implication, a particular extraneous cause for the appearance, and its cessation, for the removal of these eruptions; and in both cases we recognise the agency of influences not similarly effectual in producing or effacing the eruptions which characterise the acknowledged and regular exanthemata. Dr. R. Williams, nevertheless, after stating that two opinions were entertained of the nature of what he calls petechiæ (though his description certainly does not justify the use of that designation in its stricter sense), the one that it is an exanthematory eruption caused by the action of the typhoid poison, the other that it is a consequence of a dissolved state of the blood, shows a leaning to the former as the more probable.* We, however, are inclined to ask whether both the opinions just expressed may not be perfectly true as applied to eruptions essentially different, though not yet discriminated, nay, often confounded together in consequence of the vague use of the general term petechiæ. Dr. Watson certainly takes this view, when, after describing petechiæ as little specks or dark circular spots resulting from a minute extravasation of blood beneath the cuticle, he adds, that they are sometimes mingled with the specific rash which he had spoken of just before as stamping continued fever with one of the most striking characters of the exanthematous group of febrile diseases. Sudamina, again, or miliary vesicles, may often occur in continued fever without being peculiar to it, although in particular epidemics they are believed to form a part of its phenomena rather than to be mere accidents.†

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* Succinct Account of Contagious Fever, p. 57.

† Clinical Observations, p. 195.

‡ Medical Gazette, ii. 450.

§ Cyclopædia of Pract. Med., ii. 176.

‖ Succinct Account, p. 57.

¶ Transactions of Irish Col. of Phys., i. 257.

We conceive, then, that the cutaneous eruptions of continued fever consist of two groups, which might be well distinguished as the specific and the adventitious: the specific having a more or less regular course, and impressing its proper character on the disease; the adventitious observing no determinate laws, but marking intensity of action of the febrile poison, or peculiar predisposition of the patient, or the operation of some atmospheric or other influence. The specific rashes would then indicate identity or difference of kind; the adventitious such modifications only of the disease as extrinsic causes might produce independently of any change in its intimate nature.

It would much simplify the study of this part of our subject if all contagious continued fevers had a specific eruption, and if that eruption were always of the same kind. But in nature neither of these circumstances obtains. We have already seen that cutaneous eruptions are often absent during epidemics that are the most marked by them, and that in some epidemics they are exceedingly infrequent. We shall presently show that the characters of the specific eruptions are very various, not only in different, but during the same epidemic. Can we, then, feel confident of the identity of nature of the eruptive and non-eruptive forms of continued fever? Dr. Watson, it is true, observes that the inverse relation between the rash and intestinal ulceration is remarkable; that when one is prevalent the other is rare, as it would seem, in conformity with Dr. W. Budd's views, that the specific poison displays its elective affinities by settling sometimes upon the mucous glands, sometimes upon the cutaneous tissues, and sometimes by sharing itself, though unequally, between the two.‡ But here we have only an hypothesis, however plausible, adduced in support of the unity of the poison showing itself under different aspects. Granting the questionable fact of the inverse relation of the eruption and mucous affection, the hypothesis that the diversity of structure implicated arises from the varied action of one poison rather than from the operation of different poisons, has little or no positive evidence in its favour. It may remove a difficulty opposed to the admission of the unity of the poison in continued fevers, but it affords no argument in confirmation of that unity. If the unity of the poison be rendered probable by other independent considerations, the truth of the hypothesis may follow as a consequence; but the hypothesis has no such amount of antecedent probability as to lend any support to the opinion of the identity of these poisons.

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* Morbid Poisons, i. 53, 54. † Lectures, ii. p 732. ‡ Ibid. ii. 745.

Now such is the diversity in the aspect and course of the many cutaneous eruptions described by authors as accompanying continued fevers, whether during the same or in different epidemic visitations, as to leave us scarcely any alternative but that of considering all of them adventitious; or if admitting several of them to be specific, to admit them also as severally appropriate to forms of fever that are different in kind. And here we do not insist upon the very doubtful identity of a rash described by different authors, sometimes vaguely as petechial, sometimes as spotted, or maculated, or rubeloid, or mulberry, but upon the fact that the same observers have in not a few instances felt compelled to admit the eruptions falling under their notice as essentially distinct.

"It is to be remarked," writes Dr. Fordyce, "that in the second week of the disease an eruption often takes place on the skin quite different from that marbling or those purple spots which arise from the putrefaction of the fluids. It occurs principally about the neck and breast, and resembles very much the appearance of flea-bites; that is, there are a number of small brownish-red specks, often not the twentieth part of an inch in diameter, with a brownness of the surrounding skin. There is also another kind of eruption which consists of excrescences, something like warts, but of less diameter, and greater height from the skin, of a blackish colour and pretty fine texture. This eruption is much less frequent than the former; the excrescences are not nearly so numerous as the spots, nor are they dispersed all over the body; they seldom appear before the end of the second, and go off about the middle of the third week."* Again, Dr. E. Percival says that there are several kinds of petechial eruptions. Some are of a pale colour, indistinctly circumscribed, and often confluent, first appearing from the second to the fifth day of the fever. Another kind are the crimson or violet puncta, not visible before the third day; and yet another, a papulous or miliary eruption, which last, however, seldom or never appears alone in typhus.† Dr. Ormerod, in analysing the thirty-five cases presenting eruptions observed by him, says that they exhibited characters so different as only to be included under a very wide definition; so that he prefers speaking of them as so many forms of rash, amounting to four in number, and differing in their aspects, in the times of their first appearing, and in the proportionate mortality of the cases which they severally accompanied. Well-marked desquamation of the cuticle was noticed by this author in four cases only, and followed two different forms of eruption; and the conclusion which he draws from the review of his own cases is, that the rash is not an integral part of the fever in the same degree as is the rash of scarlatina or measles.* We take these words, however, as meaning that his cases supplied no evidence in favour of this view, not that they were opposed to it, or tended to invalidate the reasonings of others in its support.

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* A Third Dissertation on Fever, Part I. 133, 134.

† Transactions of Irish College, i. 313, 314.

Now several authors have admitted the probable existence of several forms of continued fever, specifically distinct from one another. Thus, Dr. Seaton Reid, of Belfast, in a "Report on the Fever of 1847," in that city, speaks of maculated typhus as one of four species simultaneously prevalent, and remarks that while there was no authentic record of a person having a second attack of this fever, it afforded no protection against the attacks of the other species.† The weight of similar reasoning is admitted by Dr. Watson, when he cites Dr. Alison to the effect that patients with two kinds of fever, not to be clearly distinguished from one another in the early stage, were daily admitted (during the epidemic of 1843–44), and that each of these forms of fever appeared to be easily communicated in the hospital itself to convalescents from the other. This he finds a strong evidence of the remarkable fever of the above date being more than a variety of common continued fever.‡ Dr. Jenner does not hesitate to affirm that, from observations upon between one and two thousand cases of continued fever in the London Fever Hospital, he thinks it probable that there are at least four distinct continued fevers; and although he has not adduced the ground of his belief with regard to this number, he has striven to set forth the distinctive eruptions and course of two of them, viz., the typhus fever, accompanied with the maculated, rubeloid, or as he terms it mulberry rash, and the typhoid, marked by a rose rash, of different aspect, and observing different laws. Other writers also have endeavoured to show the distinct nature of one or of both of these forms of fever, and the true exanthematory character of one or other of them. Thus a writer in the "British and Foreign Medico-Chirurgical Review for April, 1848," claims for Dr. Perry, of Glasgow, the credit of having been the first to advance that the maculated or spotted fever is a true exanthem, and supports this view on the ground, first, of the definite time of the commencement of the eruption, generally on the sixth day in the epidemic of 1847; secondly, on that of its manifesting itself electively on some parts of the surface rather than on others, as first upon the neck and chest, subsequently and more rarely upon the abdomen and upper extremities, still more rarely upon the legs, and scarcely ever upon the face; and lastly, on that of the spots having certain fixed physical characters. He maintains, moreover, that these laws, and the deviations from them, obtain about equally in scarlatina and in this disease, for which he suggests the name of *maculina.*[*] He cites Dr. Bartlett for the assertion, that a second attack of the disease is very rarely witnessed when the first had been severe, or when it had been attended by an abundant eruption.[†] If we may judge from the results of fourteen post-mortem examinations mentioned by this author, it would appear that cerebral complication was common to it, since in nearly all of them there was alteration either in the substance or membranes of the brain, varying from mere congestion to marks of extensive inflammation, and effusion of serum and lymph; while in not more than four of them were there lesions in the alimentary canal, in three of which there were both enlargement of the glandulæ solitariæ and contiguous ulcerations. Certainly, concludes the author farther on, the French doctrine that associates certain injuries of the intestinal mucous membrane and fever as an invariable circumstance, received no confirmation whatever (from the epidemic of 1847, observed in Manchester), but quite the contrary.[‡] Dr. Jenner's observations in London confirm these remarks in all their leading particulars. His researches extended from Jan. 1847, to Feb. 1849.[§] Enough has probably been stated in proof of the exanthematous character of the maculated fever. We proceed to adduce authorities in support of the opinion that a specific eruption observing different laws attends that other form of continued fever which has been described as dothinenterite by M. Bretoneau, and as typhoid affection by M. Louis. "Professor Louis," says Dr. Hodgkin, "has observed in twenty-six out of thirty-five cases of this form of fever, which he has recorded as connected with the derangement of the aggregate glands, that there was a peculiar form of cutaneous discolouration which he has described as causing red lenticular patches."[‖] They have been most frequent and conspicuous on the abdomen, but they are also seen on the chest and limbs, and have been observed to make their appearance on the sixth, seventh, eighth, ninth, eleventh, and even in one case on the thirty-fifth day, and to continue visible for an uncertain time, sometimes lasting several days, and sometimes disappearing as soon as the second day; they have been three, four, or five days in coming out, and have subsided gradually. In some cases the first have disappeared, and others have succeeded them.[¶] Dr. Bartlett, as quoted in the Review before referred to, gives the diagnostic appearances of these two rashes. "This eruption," he says, speaking of maculæ, "differs in many respects, and in a very striking degree, from that of typhoid fever. Its colour, especially after the second or third day of its appearance, is that of a duller and darker red. The spots are of a dun, dusky, purplish hue; in some cases they become almost black. They vary in size from that of a minute point to the diameter of a line, or even of an eighth of an inch. They are less regularly circular or oval than the rose spots of typhoid fever. They are not elevated above the surface of the surrounding skin, and disappear but very partially, or not at all, on pressure. They are almost always more numerous than the spots of typhoid fever, covering in many cases the entire trunk and extremities." * Dr. Jenner has pointed out other grounds of contrast, viz., that the maculæ or spots of the mulberry rash always reached the maximum of their number on the first, second, or third day of the eruption; that no fresh spots ever appeared on a later day; that each spot remained visible from its first eruption till the whole vanished between the fourteenth and twenty-first day of the disease, and that in no case was there any return of the eruption, and therefore in none any true relapse.

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* Clinical Observ., pp. 195, 196, 197. † Dublin Quar. Journ. Nov. 1849, pp. 295, 296, 297.

‡ Lectures, ii. 746.

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[*] Brit. and For. Medico-Chirurgical Review, pp. 308. 314, 315.

[†] Ibid. p. 312.

[‡] Ibid. pp. 301, 302.

[§] See Edinburgh Monthly Journal of Medical Sciences, for 1849.

[‖] Lectures on Serous and Mucous Membranes, ii. 460.

[¶] Ibid. p. 461.

Of the rose rash, on the contrary, he affirms that the duration of the same papulæ is rather more than three days; that they usually begin to appear between the seventh and fourteenth days of the fever, but that fresh papulæ make their appearance every day or two till the twenty-first or thirtieth day of the disease, and that in case of relapse they are apt to reappear. He believes the specific eruption of typhoid to be more frequently absent than that of maculated fever; since the rose rash was wanting in four out of twenty-three cases, which their general aspect led him to class under the former disease, but maculæ were present in the whole forty-three examples of the latter. †

We think that we have said enough to prove the probable existence of several species of contagious continued fever, and to show that the phenomena and laws of two of its prevalent forms have been investigated with considerable success, and with the result of establishing their near relationship to the class of exanthematous diseases.

Notwithstanding the length of this digression, the practical interest attaching to the subject warrants the risk of wearying our readers with some repetitions, while we give a connected sketch, first, of the maculated or typhus, and then of the typhoid fever, derived from Dr. Jenner's researches on between one and two thousand cases, of which sixty-six were watched throughout their course, and illustrated by the light of necroscopic examinations.

The rash of typhus fever has received a new name from this author, who designates it as the mulberry rash, appearing from the fifth to the eighth day, at first consisting of very slightly elevated spots, of a dusky pink colour, irregular in form, and three or four

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* Brit. and For. Medico-Chirurgical Review, April, 1848, p. 35.

† Edinburgh Monthly Medical Journal, 1849, pp. 674. 676, 677. 680.

lines in diameter, and in this stage disappearing on pressure. In the second stage, two or three days later, they are no longer elevated, are darker in hue, and now only fade on pressure; and in some cases the spots after this pass into faintly-marked, reddish-brown stains, and then disappear. In others a third stage supervenes, the centres of the spots become dark purple, and remain unaltered by pressure, although the circumference still fades; or the entire spots change into true petechiæ, of a dusky purple colour, quite unaffected by pressure, with a well-defined margin, and total want of elevation above the cuticle. In a large majority of cases these spots are very numerous, usually situated on the trunk and extremities, and now and then observed on the face. When they were in their third stage, at the time of death, it was found that the purple colour affected the whole thickness of the cutis, and even extended into the subcutaneous tissue.

The other peculiarities of typhus, according to this author, as contrasted with typhoid fever, are, that it affects individuals at a more advanced period of life, occurring at times in the aged, or those above sixty or even seventy years of age. Its attacks are more apt to be abrupt, being in a small proportion only gradual and insidious; the aspect of the patient is more constantly dull and heavy, and the prostration greater; the headache as early, but generally less persistent; the delirium less active; somnolence or coma vigil of more ordinary occurrence; epistaxis less frequent, indeed very rare; the tongue more commonly dry and brown in some part of the disease, abdominal tenderness less customary and less severe, as also diarrhœa, and bloody stools not observed, while the urine is more abundant, and the pulse throughout more feeble; emaciation also is less marked. As the results of the post-mortem examinations made in this fever, it is stated that recent disease of Peyer's glands was absent in every one of the forty-three; that no deviation from the healthy state was observed in the solitary glands; that with four exceptions there was no trace of inflammation of the large intestines, while the mesenteric glands were also in a natural condition in all but two examples, occurring in children, in which they as well as the lungs were the seats of tubercular deposit. Dr. Seaton Reid, in the Report before referred to, remarks of the complications of this fever, as witnessed in Belfast in 1847, that in addition to affections of the head they consisted in inflammatory affections of the lungs, while abdominal complications were the most rare of any.* We have given above evidence of the same state of things existing in the fever of the same year observed at Manchester.

The rose rash of typhoid fever is described by Dr. Jenner as consisting of soft red papulæ, slightly elevated, not acuminated, but rounded on their apices; of a bright rose colour, fading into the natural hue of the skin around them, and never having a well-defined margin. They are circular in form and about a line in diameter, and the duration of the same papulæ is about three days, but fresh papulæ make their appearance every day or two. The number seen at any one time, varies from six to twenty, but occasionally amounts to a hundred. They usually occupy the abdomen and back, but sometimes the extremities. They begin to appear between the seventh and fourteenth day, and there is a fresh production every day or two till from the twenty-fourth to the thirtieth day of the fever, and in case of relapse they are apt to reappear. They vanish completely under pressure in every stage of their course. Their customary paucity and minuteness render it highly probable that they might readily be overlooked, and their presumed absence would favour the view already noticed of the fever poison having spared the skin to attack the intestinal canal. The subjects of this disease, as observed by the present author, were in no case at so advanced an age as several of those who suffered from typhus. The attack was insidious in more than half the cases; the prostration less in the early stage, and the death somewhat later, than from the latter disease; the expression, too, was less dull and heavy; the face had a brighter flush; the headache was more enduring, the delirium more active; epistaxis was a not uncommon symptom; coma vigil was not observed; the tongue was moist throughout the disease in one half of the cases, while abdominal tenderness and distension, diarrhœa, and even bloody stools were frequent; and emaciation was more common than in typhus. Post-mortem examinations showed lesions within the skull to be inconsiderable or absent; ulceration of the agminated glands, or Peyer's patches, to have existed in all; perforation of the intestine to have taken place in three. Ulceration of the cæcum or colon, or of both, was observed in about one-third of the cases, while the mesenteric glands were more or less extensively and unequivocally diseased in all, being constantly larger than natural, and the more increased in volume as they approached nearer the ileo-cœcal valve.*

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* Dublin Quarterly Journal, Nov. 1849.

We come next to speak of the morbid appearances which are discovered after death in fatal cases of fever. And here it is important to observe, that in some instances there are no lesions of structure at all sufficient to account for the unfortunate event. As an example we may cite the case already referred to, which was the subject of a clinical lecture by Dr. Corrigan, of which it is said that the post-mortem examination revealed effusion of mucus into the bronchi as the only morbid appearance; with this exception, not the slightest trace of disease was found either in the intestinal canal, as might have been anticipated from the purging, or elsewhere. Dr. Alison, too, states, as a fact to be borne in mind, the occasional entire absence, after fatal fever, of any appearances which can strictly be called morbid.

To the same purport Dr. Christison remarks, in his article on

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* See Dr. Jenner's Papers, not yet completed, in Edinburgh Monthly Journal of Medical Sciences for 1849.

Continued Fever*, "In the first place there can be no question that cases of death from true continued fever, of the typhoid or synochus type, occasionally present themselves where no morbid appearance whatever is detected, except congestion of internal parts." Having enumerated various indications of these local congestions, he goes on to say, "That some of these appearances exist during life, seems highly probable. Nevertheless, it is material to remark, that all the phenomena now mentioned come also under the denomination of pseudo-morbid appearances, and may be occasioned merely by the particular manner of death, that is, slow failure of the respiration before arrestment of the circulation, or by organic processes carried on during the first few hours which succeed the extinction of animal life." Dr. Tweedie, too, has made a distinction between simple and complicated fever, and in entering on a description of the latter division of his subject, he says, "In the preceding observations it has been our object to show, that in simple fever the disturbance in the various organs, however severe, is only functional, no inflammation in any organ having as yet taken place;" and he states farther on in a note, "that of 521 cases selected from the journals of the London Fever Hospital, there were 163 in which the fever was not apparently complicated with local inflammation in any organ." When speaking of the morbid anatomy of fever, he says, "It is necessary to premise that in some cases of sudden and early death from fever, no changes of structure sufficient to account for the fatal issue have been discovered."

We have especially insisted upon this particular in the pathology of fever, on account of the importance of the inference to be drawn from it; for we conceive, that if it be ascertained beyond a doubt that continued fever can exist and prove fatal, even in a few instances, without our finding after death any evidences of local disease, then it is established that fever is independent in its essence of local inflammations or lesions, and that these last, when they do appear, as doubtless they do in a majority of cases, are fearful incidental complications, but not necessary components of it.

The morbid appearances observed in fevers may be considered in order, as they occur in the head, the chest, and the abdomen.

Of those within the head, increase of the natural serous exhalation is amongst the most frequent; but it is not to be concluded that this is in all cases due to inflammation, and it is not certain that the presence of a moderate amount of serum is to be considered even as morbid.

An injected or unusually turgid state of the blood-vessels on the surface and in the substance of the brain, is often found after fatal fevers; and in a few cases effusions of lymph on the membranes have been met with, and sometimes pus itself has been seen. The brain has, besides, been found somewhat firmer or softer than natural.

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* Library of Medicine, i. p. 150.

We have already stated our belief that actual inflammations are sometimes referred to the head of fevers, and hence arguments in favour of the local inflammatory origin of fevers, or of the frequency of inflammatory complications, are erroneously deduced from cases which should be excluded altogether, as not belonging to the class of diseases, the nature of which they are cited to illustrate.

Dr. Christison's observations are very worthy of attention as bearing upon this point, when, after asserting that "true meningitis is a very rare affection as secondary or incidental to continued fever," he goes on to say: "Where the symptoms are characteristic, and the diagnosis during life is shown to be justified by unequivocal appearances after death, it generally admits of question whether the disease ever was continued fever or anything else than a primary local inflammation. It is a strong proof of the reasonableness of this question that unequivocal meningitis is exceedingly rare, where alone there can be no doubt of the fever being primary, in cases of fever being referable to infection."

Dr. Todd, in his recent "Lumleian Lectures," shows the total independence of the delirium of typhus, of any inflammatory state within the head. Thus he says, "I have had many opportunities of examining patients after the delirium of typhus, and in no instance have I been able to detect any lesion bearing upon the delirium. The brain in typhus is essentially healthy, but the condition of its blood-vessels corresponds with that of the blood-vessels everywhere else, viz., a state of laxity of their coats while they contain, or appear to contain, more than their normal quantity of blood, and that of a dark venous kind. In some cases there is more or less subarachnoid fluid, in others the fluid is absent; never is there any sign of an active morbid process, like inflammation, either in the brain or its membranes, tending to generate new matter, as lymph or pus, and to destroy existing tissue."*

Various morbid changes are discovered also in the lungs, due, we believe, in the majority of instances, rather to congestion and gravitation of the fluids than to active inflammation.

In some cases there is an aphthous inflammation of the mucous membrane about the fauces and larynx, impeding deglutition and respiration and aggravating the cough during life, and in a few instances giving rise to abscess in those parts.

The mucous membrane of the bronchi is often vascular, perhaps thickened, and loaded more or less with viscid or frothy mucus; and some amount of serous effusion into the pulmonary cellular tissue is also frequently observed.

The lung in protracted cases is wont to be so condensed in its posterior or depending portions, as not to crepitate between the fingers and to sink in water, while it is softened, or at all events is more easily torn, than when in a state of health. It is, at the same time, less firm and of a darker colour than when solidified by pneumonia, so as to constitute what has been termed hepatized lung.

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* Medical Gazette, 1850, x. 748.

The evidences of pneumonia of greater or less extent, and in its successive stages of infiltration with serous or bloody fluid, of red solidification, or of softening from the formation of pus, are said to have occurred in some epidemics. Yet both pneumonia and pleurisy are, on the whole, rare local affections in the course of fever; but they, as well as pericarditis, are sometimes met with in the early stage of convalescence as the result of undue exposure. Gangrene of the lung, and apoplexy of the lung, have been found after death in a few instances, which exhibited during life their respective symptoms of peculiar fœtor of the breath or copious hæmoptysis.

Of all the morbid appearances which have been discovered after death in the bodies of those who have fallen victims to continued fever, there are none that are more frequent in their occurrence, more peculiar in their nature, or more important in their influence on the course of the disease, than such as are met with in the alimentary canal and abdomen. Now the structures which are especially prone to be affected, are those congeries of glands which have been named, from the circumstance of their being collected into groups, the agminated, or after their discoverer, the Peyerian glands. These bodies have their seat along the side of the bowels, opposed to the insertion of the mesentery; are most numerous towards the termination of the ileum, but may be seen throughout the greater part of the small intestines. They vary much in size, from that of a small almond to an inch or two in length; and occur at intervals of a few inches from each other, but are by no means equidistant, being closer in the lower than in the upper part of the intestine, and in some instances almost touching one another. Dr. Hodgkin, from whom we have borrowed the preceding description of these glands, states them to be liable to two forms of acute inflammation.

In the first of these, the thickness of the patches is little increased, but they are reddened by minute, and more or less intense injection, in which the surrounding mucous membrane frequently participates. Instead of an increase, there is often a striking diminution of secretion; and fœcal matter or inspissated mucus often adheres to the surface of the patches, as well as to the edges of the neighbouring valvulæ conniventes, while abrasion is very easily produced by an attempt to remove the inspissated secretion. This form of inflammation, though not always unaccompanied by ulceration, Dr. Hodgkin thinks to be far less frequently so attended than that which produces considerable thickening.

In the second form of acute inflammation of the patches of aggregate glands, there is a remarkable increase of thickness, the subjacent cellular membrane as well as the gland being implicated. Where the disease is least advanced, the glandular patch is decidedly prominent, its surface being probably unaltered in colour or form. In other places the thickening is more considerable, and the surface more strikingly uneven; and again in others the mucous membrane appears deficient or discoloured, and when ulceration has taken place it is more extensive than in the first form, occupying at times the whole surface except the edges. The ulcerated surface appears to consist of the thickened glandular structure and subjacent membrane, and is frequently of an ochre yellow or dirty olive colour.

In inflammation of the first kind, the ulceration is more often partial; but by spreading and occurring in several spots, the greater part of the surface may become ulcerated. Ulceration, too, may extend in depth, and produce perforation. The ulceration of the thickened glands is generally accompanied by the sloughing of a considerable part of the subjacent structure. It is to be observed that it is in the lower portion of the ileum that the inflammation and ulceration of the aggregate glands is most frequently met with, that it is here that it is found in its greatest intensity, and that when inflammation has affected the glands higher up in the canal, it appears to have been by extension from the lower part of the ileum; the derangement being found at this part in the most advanced stage, while it is seen to be less and less advanced the higher you ascend in the intestine.

Whether ulceration has been attended by a slough or not, it seems that after spreading and extending for a time, a process of healing commences, granulations appear at the margin of the ulcer, and thus cicatrization is produced; this process being aided by a drawing together of the margin, by which some puckering is produced in the surrounding mucous membrane.

That inflammation and ulceration, such as they have been just described in the inferior portion of the ileum, having their principal seat in the glandular apparatus, and more particularly in the aggregate glands, are of frequent occurrence in cases of fever, is matter of agreement amongst the best pathologists.*

Rakitansky notices it as a peculiarity of the typhous ulcer and its cicatrix, that it never in any way gives rise to a diminution of the calibre of the intestine.

The same author has traced the successive changes of the mesenteric glands, which are first slightly swollen, soft, and dark-coloured; next more enlarged, so as to be of the size of a bean or hazelnut, blue or bluish-red, and apparently infiltrated with a lardaceous mass; afterwards they may reach the size of pigeons' eggs, and in the vicinity of the ileo-cœcal valve even of hens', and form a tuberculated chain; and they are soon converted into a greyish red, loose, medullary matter, often intermixed with extravasated blood. Then they begin to decrease, and at last return to their normal size; or not unfrequently they shrivel up, so as to become considerably smaller, and at the same time tough and pale.

The spleen is enlarged to from twice to six times its natural size, and its sheath becomes tense and smooth, while its tissue is friable, and contains a dark purple, semi-coagulated, or perfectly fluid mass.†

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* See Dr. Hodgkin's 21st and 22d Lectures on Morbid Anatomy of the Serous and Mucous Membranes.

† Sievekin's Rokitansky, ii. 68—74.

The causes of continued fever come next to be considered, and we find the evidence in favour of contagion as one of them, so clearly set forth in Dr. Wardell's able account of the Scotch fever of 1843–44, and as published in the second volume of the "Medical Gazette" for the year 1846, that we cannot do better than extract his statement; and we are the more induced to pursue this course, because we meet with the same facts and reasonings here set forth, in reference to this recent epidemic, which, as observed and applied in other similar visitations, have carried conviction to the minds of the great majority of the medical profession. He begins by affirming that, "as to the fever of 1843–44, indubitable proofs were afforded of its contagious properties. Most of the medical officers," he goes on to say, "connected with the Edinburgh Royal Infirmary, and additional fever hospitals, were seized with it. Eight of the resident and clinical clerks, in quick succession, became affected. The majority of the nurses and domestics took the disease, and of the former, at one time, no less than nineteen were labouring under it. Some of the dispensary physicians and other practitioners took the disorder, as also several of the clergy and visitors of the sick, whose duties brought them to the bedside of the patients. The few cases occurring amongst the higher classes resident in the new town, were generally to be traced to the influence of contagion, the parties affected having had either immediate or indirect communication with those suffering under the disease. Of the gentlemen resident in the Edinburgh Infirmary, who acted as the surgeons' assistants, none took the epidemic, although liable to the same local and common causes as the clerks, whose duties lay in the medical wards; but they had no communication with the fever patients, and were not exposed to the poison, which at once accounted for their immunity."

To the same purport, and applicable to a wider and more continued sphere of observation, are the remarks of Dr. Tweedie, in his "Clinical Illustrations of Fever," as quoted in the article on Contagion, in the "Cyclopædia of Practical Medicine."

"Every physician," he there says, "with one exception, who has been connected with the Fever Hospital, has been attacked with fever during his attendance, and three out of eight have died. The resident medical officers, matrons, porters, domestic servants, and nurses, have one and all been invariably the subjects of fever; and the laundresses, whose duty it is to wash the patients' clothes, are so invariably and frequently attacked, that few women will undertake this duty. The resident medical officer was attacked with fever, and it became necessary to appoint some one to perform his duties. The first person who thus officiated took the precaution of sleeping at home, yet his duties were soon interrupted by an attack of fever, that confined him for a considerable time. He was succeeded by an individual in robust health, a disbeliever in the doctrine of contagion. He performed his duties only ten days when symptoms of fever appeared."

"There is no security in this narrative against the favourite argument of the non-contagionists, but the following collateral circumstances present an obstacle to the intrusion of malaria, which only bigotry or the spirit of partisanship can enable it to surmount. The Fever Hospital stands in the centre of a large field, where the production of malaria is exceedingly improbable, and on the same lawn and within a few yards of it, stands the Small-pox Hospital; but no case of genuine fever has occurred among the medical officers or domestics of that institution for the last eight years."

Dr. Christison prefaces his arguments in support of the infectiousness of fevers at the 154th page of the first volume of the "Library of Medicine," with the remark that, "in the British Islands, probably not above one physician in fifty entertains any doubt of the infectious nature of continued fever;" while he concedes that in France and Germany the opposite doctrine is prevalently adopted, though not by so preponderating a majority.

We cannot follow him in the enumeration of his proofs, which, however, to ourselves as well as to him, seem fully to justify his farther inquiry as to the rules which, in the British Isles at least, seem to govern its communication. Our limits will not either allow us to cite the observations or arguments of other writers, nor indeed to set forth our own. We should, indeed, despair of producing conviction in the minds of any, by the publication of individual examples in point, if the evidences which we have adduced or referred to, founded as they are, on facts observed in large bodies of men throughout a number of years, fail to attain that object.

We shall give, in the words of the author last noticed, the conclusion at which he has arrived, when investigating the question, whether continued fever originates in any other cause than infection, or in propagation from the sick to the healthy. "Fatigue, mental emotions, atmospheric exposures, noxious effluvia, and excesses of the table, sometimes seem to induce an attack of fever. Often, however, the real cause is the lurking poison of infection, which the incidental source of excitement on the one hand, or of exhaustion on the other, calls forth into action. Frequently, too, the disease produced in other circumstances is an irritative, not a primary, fever. And as for the few instances remaining, where true primary fever appears to originate in one of the above causes, all that need be said farther is, that for one instance where such fever follows such cause, a thousand instances occur where no effect of the kind ensues; and, consequently, that some more essential influence is probably brought into play than what appears on the surface of the investigation."

We fully concur in the soundness of this judgment, in which, while causes of fever, other than infection, are not altogether denied, it is distinctly intimated that their existence is not proven.

The circumstances rendering persons more liable to be attacked by fever, seem to be debility, induced either by great fatigue or violent exertions; by long fasting; by the want of natural rest; by excessive evacuations; by previous disease; by errors in diet; by intemperance in drinking; by great sensuality; by too close an application to study, or giving way to grief, fear, or great anxiety; or by the continued operation of other depressing influences.

Dr. Haygarth* laboured for many years to ascertain by numerous facts which had occurred to himself and to other practitioners, with whom he had professional intercourse, in what manner the contagion of typhus is propagated, in order to discover how it may be prevented. The chief of them may be comprised in the following laws of typhous contagion.

I. Miasms (or contagious vapours), issuing from patients ill of typhus, or from the poison contained in their dirty clothes, utensils, &c., are diffused or dissolved in air, and thus infect persons who are exposed to them.

II. These miasms render the air infectious but to the distance of a few feet from the patient or the poison. They never extend so far as to infect persons in an adjoining street, or an adjoining house, or in an adjoining room of the same house, or even in the patient's own chamber, if large, airy, and kept clean.†

III. The miasms of variolous, scarlet, typhous, and other contagions, do not render clothes, &c. exposed to them contagious.‡

IV. Hence it follows, that the only way by which typhus can be conveyed from the patient's room, so as to infect others out of it, is in the form of contagious dirt, as dirty clothes, utensils, &c.; and consequently that the contagion may be completely destroyed by washing them clean. An elevated temperature of above 120° Fahr. also destroys these contagious principles.

V. The typhous poison remains in the body in a *latent* state from about the tenth to the seventy-second day §, reckoning between the time of exposure to the contagion and the commencement of the fever. This law of nature was discovered by Dr. Haygarth, in 1781, from observations on seventy-two cases. It was fully confirmed by Dr. Bancroft ‖, in 1809, from observations on ninety-nine cases, who as orderlies and nurses attended the army which had arrived at Plymouth from Corunna, infected with typhus: they had not been previously exposed to contagion.

As regards the influence of age, it appears that the middle periods of life are most liable to the occurrence of fever. In a table given by Dr. Tweedie of the number of cases, amounting to

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* See his Letters to Dr. Percival, on the Prevention of Infectious Fevers.

† See his Letter to Dr. Percival, p. 76.

‡ See Letter, p. 54.; and his Inquiry, pp. 67. 86.; and his Sketch, pp. 217. 369. 384. 386. 404. 542.; and the cases related under Scarlet Fever, where sixty-five young ladies were not infected, though approached by clothes exposed to contagious miasms.

§ See Letter, pp. 64. 69.

‖ See his Essay on Yellow and Typhus Fevers, p. 515.

676, admitted into the London Fever Hospital in one year, it appears that 408, or more than one half, occurred in individuals between fifteen and thirty years of age. No less than 68 happened in patients between ten and fifteen, which is the highest number for any quinquennial period next to those included in the above term. Of these patients, 324 were males and 352 females, showing the somewhat greater susceptibility of the latter sex.

Dr. Bulman has published* some valuable statistical tables, showing the mortality from continued fever in the Newcastle Fever Hospital from the year 1804 to 1849, both inclusive, from which it appears that during these forty-five years the number of males treated was 1818, of whom 244 died, thus giving a mortality of 1 in 7½ very nearly; while of the smaller number of 1315 women, who were patients during the same period, 148 died, or 1 in 9 very nearly. In 8988 cases treated during the same period at the Dispensary of the same town, and which were no doubt much milder, there were 287 deaths only, or 1 in 31 very nearly. While, if the two sets of cases be taken together, we have 679 deaths in 12,121 cases, or a little more than 1 in 18. These averages, however, founded on the experience of many distinct epidemics in a long series of years, give no just idea of the rate of mortality of different seasons, which, indeed, is so various, that it may be stated as observing every proportion between 1 in 4 and 1 in 15, which are the extreme limits in this table.

The best data we possess for the determination of the influence of the different seasons of the year upon the mortality from continued fever or typhus, are to be obtained from the valuable Reports of the Registrar General. We learn from the eighth of these, that during eight years, from 1840 to 1847, both inclusive, the total deaths in London, from this disease, falling within the quarters ending in March, June, September, and December, were 3075, 3234, 3352, and 4061 respectively; thus showing a marked increase in the last as compared with the first half of the year.†

Treatment. — The general experience of the adynamic nature of the continued fevers prevalent since the first invasion of Asiatic cholera, juster views as to their pathology, and an estimate of the results of various plans of practice formerly adopted in this order of diseases, have conspired to banish all bold and heroic measures from their treatment, and to produce the universal adoption of a cautious and expectant method. Reflections are not now directed against him who does too little, but against him who does too much; the nimia medici diligentia has become a familiar phrase, conveying a caution if not a reproach. The mon-idealism in pathology, which referred all deviations from health to inflammation as their cause, and the mon-idealism in therapeutics, that estimated depletory measures as the only means capable of arresting such presumed inflammatory mischiefs, have now happily passed away. A return to the admission of specific morbid poisons as influential agents in the production of many diseases, and among them of continued fever, —the recognition of natural agencies at work for the elimination of those poisons, agencies requiring a stated time for their effective operation, and giving thus a definite course to the maladies which they accompany,—the knowledge that the co-existent local complications are not always inflammatory in their nature, and that when inflammatory they have a specific character, as in the typhoid affection of Peyer's glands, and must go through a more or less determinate course in their progress towards a cure, — all these considerations have had their weight in effecting that change in the principles of treatment of which we are speaking. Hence little faith is now placed in any remedial measures as adequate to cut short or to cure continued fever, and the only admitted indications are to palliate symptoms as they arise, to mitigate, as far as we can, each source of danger, to obviate the tendency to death, and thus to support and guide the patient till nature, in due time, carry him through the perils which beset him. To husband his powers must then be a primary object of the physician; but so to husband his powers as not to aggravate a general action, which may be at times excessive and injurious, or local mischiefs, which may partake of an inflammatory character. To abate the general excitement, to relieve as far as possible the local complications, are other prominent objects of his solicitude, but not by such energetic means as shall reduce the power of enduring, in a greater degree than they can diminish, the source of danger. The simplicity of the means most adequate to fulfil these opposite indications is manifested from the large success attending Dr. R. Williams's treatment of continued fever, which consisted in the administration of ten grains or a scruple of rhubarb, whatever the stage or state of the disease, followed by the injection, night and morning, of a pint of barley-water, together with half an ounce of syrup of poppies.* And the writer of the review already so often quoted, says, in reference to the treatment of the fever of 1847, "that keeping patients in bed from the beginning, and making them remain there till the commencement of convalescence, exclusion of injurious stimuli, cleanliness, and free ventilation, with farinaceous and diluent drinks, sufficed, in most instances, to bring them successfully through the disease without resort to active measures at all. Indeed, we had occasionally reason to think, that a simple saline, prescribed only as a placebo, constituted a source of irritation to the gastro-intestinal mucous membrane." †

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* Medical Gazette, i. 1850, 335, 336.

† Pp. 146. 148. 150. 152.

A person labouring under fever ought to be kept in bed, and as composed and quiet as possible; and his chamber should not be close and warm, as is too usually the case, but, on the contrary, perfectly cool and well ventilated: care being taken, however, that the air does not come in a direct stream or current upon him. He is to be lightly covered with bed-clothes, and the strictest cleanliness observed in his person and everything about him.

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* Morbid Poisons, p. 87.

† Brit. and For. Medico-Chirurgical Review, April, 1848, p. 303.

The pursuance of an antiphlogistic regimen will be highly necessary to be observed at the commencement of this fever. That sort of aliment which gives the least stimulus will be the most proper: the food should be light, and easy of digestion, consisting of preparations of barley, oatmeal, sago, vermicelli, tapioca, and the meal of Indian arrow-root, panado, roasted apples, &c. Animal broths produce an increase of heat in the body, and are therefore improper in the early stages of fever. When on the decline, or pending a state of convalescence, chicken-broth or beef-tea may be allowed; for ordinary drink, he may take barley-water, apple-tea, toast and water, milk-whey, thin gruel, and lemonade; which may be varied now and then for an infusion of balm, and other like herbs, the use of any kind of fermented liquor being forbidden. Milk has indeed been much interdicted by medical men in most febrile complaints; but this appears to be an ungrounded prejudice, as there are very few cases of fever where so bland and nutritive a fluid will be improper. Milk, when cold and somewhat diluted with water, or in the form of whey, may be taken to allay thirst during the course of fever with as great safety (in my opinion) as any other fluid; and it will at the same time tend to support the patient's strength through the subsequent stages of the disease.

In fever it is no uncommon occurrence for peculiar longings to arise; and when they do, they should be gratified in moderation, although they may seem not altogether proper. These are seldom observed except in an advanced stage.

The stomach and the rest of the alimentary canal are manifestly affected in many cases of fever in a higher degree than other parts of the body, and therefore emetics and purgatives are usually the first means which present themselves to the notice of the physician. In fever it will therefore be necessary to pay an early attention to the state of the stomach; and if there are any crudities or corrupted humours, producing nausea or vomiting, to dislodge them by administering a gentle emetic.* To assist its operation, the patient should drink freely of lukewarm water, or an infusion of camomile flowers.

An emetic has the double advantage of clearing the stomach of sordes (whether undigested aliments, vitiated mucus, or bile), and of determining the blood to the surface of the body, and in this way relieving the oppressed state of internal organs.

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* ℞ Pulv. Ipecac. gr. xv.	* Take Powdered Ipecacuanha, fifteen grains.
Antimon. Tartarizat. gr. j.	Tartarized Antimony, one grain.
Aq. Menth. Virid. f. ℥jss. M.	Mint Water, one ounce and a half.
Ft. haustus emeticus.	Mix these for an emetic draught.

To remove the feculent contents of the bowels, some gentle laxative* may be taken at the commencement: and throughout the remainder of the disease the body should be kept open, if necessary, by a repetition of some such medicine, administered as the occasion may require, or by means of aperient clysters.† Where the disorder seems to have arisen from, or to be kept up by, a redundant secretion of bile, mild purgatives will be still more highly necessary; and, perhaps, the submuriate of mercury, joined with a few grains of jalap or cathartic extract, may best answer our purpose. Purgative medicines are sometimes combined with antimonials.‡

It may seem improper to object to the early exhibition of emetics in this fever, sanctioned as it is by the authority of many names of great weight; nevertheless we believe, with Dr. R. Williams, that their employment is supported neither by just theory nor by experience, and that it forms part of a routine practice which has now fallen into very general disuse. Without attributing any great or permanent evil to their employment, we conceive that they are calculated to occasion some distress by their operation, not compensated by any adequate advantage. As regards the exhibition of purgatives, it seems desirable at the commencement of the attack to have recourse to such an one as may completely remove retained ingesta and morbid secretions, and also relieve the congestion of internal organs; and for these conjoint indications a brisk cathartic, as of calomel and jalap, will be requisite. There is no evidence that its operation disposes the bowels, while yet unaffected, to take on a diseased action: such a cathartic is therefore suited to the first few days of fever. But if the patient be first seen at a more advanced period, when there is reason to suspect already existing mischief, a milder aperient, as of rhubarb alone, or of castor-oil, or a laxative enema, will be a preferable remedy. "Notwithstanding," writes Dr. Hodgkin, "the notorious fact, that in fever ulceration is a common occurrence in the course of the alimentary

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* ℞ Potassæ Tartrat. ℥ss. Infus. Sennæ, f. ℥iij. Mannæ Optim. ℥j. —— Cinnam. f. ℥ss. M. ft. Solutio, cujus sumat dimidium, et repetatur dosis post horas duas, nisi alvus prius respondeat.	* Take Tartrate of Potass, half an ounce. Infusion of Senna, three ounces. Manna, one ounce. Cinnamon Water, half an ounce. Mix them, and of the solution take the half for a dose; which repeat after two hours, unless the bowels are sufficiently acted upon by the former.
† ℞ Sodæ Sulph. ℥j. Decoct. Malvæ Composit. f. ℥xij. Olei Olivæ, f. ℥ss. M. Ft. enema.	† Take Sulphate of Soda, one ounce. Common Decoction of Mallow, twelve ounces. Olive Oil, half an ounce. Mix them for an aperient clyster.
‡ ℞ Hydrargyri Submuriat. gr. v. Pulv. Antimonial. gr. j.—ij. M. Ft. pulvis.	‡ Take Submuriate of Mercury, five grains. Antimonial Powder, from one to two grains. Mix them.

canal, we must not be led to reject the use of aperients and purgatives by regarding these agents as merely irritants of the alimentary canal, and overlook their general influence on the system. We are far from objecting," he adds, "to the occasional contact of irritating substances with those ulcerations which depend on spontaneous or constitutional causes, and are characterised by acute sensibility and obstinate indisposition to heal."* Too free purgation is, however, to be avoided, on account of its debilitating effects, at every period of the disease, and when the second, or black tongue stage, has set in, even laxatives, as a general rule, should be omitted altogether.

If great heat with much thirst prevail, refrigerant medicines may be taken with advantage; and the most useful of this class is the nitrate of potass, which may either be joined with others†, or be added to whatever the patient uses for common drink.‡

Acids of all kinds, when sufficiently diluted, are refrigerant remedies well adapted to continued fevers. Those most in use are the sulphuric, muriatic, and vegetable; but more particularly the latter, such as the acid of tamarinds, oranges, lemons, mulberries, &c. As a refrigerant, cold water may likewise be drunk, and will generally be preferable.

The practice of bathing in fevers appears to be of great antiquity, for its use and management were well known to Galen, and are well defined by him. It farther appears, by the relation of travellers, to have been long used by several of the eastern nations. We have likewise indisputable proof that cold affusion had long ago been employed by Dr. Wright of Jamaica, and some other physicians in the West Indies, particularly by Dr. Jackson. The notice which this remedy has attracted in England has certainly, however, been owing to the popular manner in which the subject has been treated by the late Dr. Currie of Liverpool; yet, notwithstanding the encomiums which he has bestowed upon it, it seems so far to have failed in the hands of others as to have fallen altogether into neglect. Cold affusion, according to Dr. R. Williams, had by most physicians been laid aside, and the sponge substituted for the shower-bath. The use of the latter, as he remarks, is attended with inconvenience, fatigue, exposure, and alarm, and produces little more than the temporary alleviation of certain symptoms which the use of the sponge equally effects.* It was not, indeed, to be expected, as he justly argues, that a poison circulating with the blood could be removed from the system by ablution of its surface; even cold or tepid sponging is rarely spoken of, much less insisted on, by the most recent authors, and is only, we believe, resorted to as contributing to cleanliness and comfort. It may be safely employed for abating the heat of the skin whenever this is permanently excessive, otherwise even free sponging is scarcely advisable, and in cold weather it becomes objectionable on account of the increased risk of pulmonary affection to which it exposes the patient.

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* Lectures, ii. 508.

† ℞ Succi Limon. f. ℥ss.
Pottassæ Subcarbon. ℈j. vel. q. s.

Ad ejus saturationem, dein adde
Potassæ Nitrat. gr. x.
Aq. Fontan. f. ℥j.
Syrup. Violæ, f. ʒj. M.
Ft. haustus, 4tiâ quâque horâ sumendus.

‡ ℞ Decoct. Hordei, Oij.
Potassæ Nitrat. ʒj.
Ft. potus.

† Take Lemon Juice, half an ounce.
Subcarbonate of Potass, one scruple, or a sufficiency.
After being saturated, add
Nitrate of Potass, ten grains.
Pure Water, one ounce.
Syrup of Violets, one drachm.
Mix them, and let the draught be taken every four hours.

‡ Take Decoction of Barley, two pints.
Nitrate of Potass, one drachm.
Mix them for ordinary drink.

We hold that neither general nor local bloodletting is appropriate to synochus. Supposing, that is to say, that the disease before us is clearly recognised as synochus, that fact would be an argument against, not in favour of, bloodletting, either local or general. If local inflammation complicate synochus that local affection may require some depletion; but even in this case the depletory means resorted to should be less energetic than such as are often required for the relief of inflammation occurring under ordinary circumstances. Three considerations make the propriety of these assertions sufficiently manifest. These are, first, the debilitating influences of the fever itself, as arising both from the nature of its specific cause, which of late years has been observed to be a depressing one, and also from its determinate and generally protracted duration. Secondly, the constitutional state of those who are wont to be the subjects of this fever, which is not that of plethora and vigour, but, on the contrary, that of depression and exhaustion in almost every case, and generally in an eminent degree. Are we not constantly reading that fever is the invariable attendant upon famine? And are not innutritious and insufficient food, and all the debilitating influences of impure air, of external filth and wretchedness, and of internal anxiety and despair, constantly and justly assigned as causes of fever, mainly instrumental in its propagation and prevalence, if not in its actual production? And where these sources of debility are wanting, is it not among the feeble in natural constitution, or those exhausted by unwonted exertions and fatigue, or among those enervated by intemperance and excess, that the victims of fever are especially to be found? To reduce still farther by active bloodletting and other evacuants those whose inanition and debility have brought them into the peril in which they lie, seems opposed alike to the dictates of sound reasoning and to the conclusions of experience. But besides all this, there can be little ground for bleeding in fevers if it has been ascertained, as we think it has been, that acknowledged inflammations are much less amenable to this remedy than they were formerly supposed to be; and farther, that the complications of fever, when inflammatory, are not examples of such simple and sthenic inflammation as are most likely to be benefited by that measure; nay, that "the inflammation in this class of cases is nearly always of an asthenic type, and will in some circumstances be more likely to disappear under the influence of nutrition and stimulation than of leeches and starvation."* The same remark is true of the congestion of the lungs or head, of which dyspnœa or coma may be the symptoms, and of that state of the brain which declares itself by delirium, too often considered as demanding active interference by depletion. We revert, then, to our position, that we should be backward to take away blood in the course of this disease; and that if the well-ascertained existence of acute inflammation render local depletion advisable, we should resort to cupping or leeches with a more timid hand than where the same inflammations constitute the whole of the complaint.

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* Morbid Poisons, i. 71.

Some physicians, as Dr. R. Bright, confide in the alterative action of mercury; and if this be desired, a pill consisting of three grains of mercury with chalk, and half a grain of ipecacuanha, made up with mucilage, is well calculated to prevent or to allay alvine irritation, and to improve the secretions of the bowels; and this may, if it seem advisable, be continued so as to produce a slight specific constitutional effect. It is to be taken three or four times a day, either alone or with any of the salines to be presently mentioned. When the fever is more advanced, a pill consisting of two grains of the mercurial and an equal quantity of Dover's powder, will sometimes be substituted with advantage where the bowels have a tendency to become relaxed.

Neutral salts, when taken into the stomach, moderate the heat on the surface of the body; and if it be lightly covered, a gentle sweat is often readily brought on. These, therefore, are useful in fever, and may be prescribed as in the under-mentioned forms.†

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* Brit. and For. Medico-Chirurgical Review, April, 1848, p. 319.

† ℞ Ammon. Sesquicarbonat. gr. x.

Succi Limon. f. ℥ss.
Aq. Menth. Virid. f. ℥j.
Tinct. Lav. Comp. ♏xx.

Syr. Althææ, f. ʒj. M.

Ft. haustus.

Vel,

℞ Succi Limon. f. ℥jss.
Potassæ Carbon. ʒj. vel. q. s. ad.

Ejus saturat. dein adde
Aq. Menth. f. ℥j.
—— destillat. f. ℥iij.
Antim. Tartarizat. gr. ss. ad gr. j.

Syrup. f. ʒij. M.
Ft. mistura, cujus capiat cochl. ij. magna ter die.

† Take Sesquicarbonate of Ammonia, ten grains.
Lemon-juice, half an ounce.
Mint Water, one ounce.
Compound Tincture of Lavender, twenty minims.
Syrup of Marshmallow, one drachm.
Mix them for a draught.

Or,

Take Lemon-juice, one ounce and a half.
Carbonate of Potass, about a drachm.
After the effervescence has ceased, add
Mint Water, one ounce.
Pure Water, three ounces.
Tartarized Antimony, from half a grain to one grain.
Common Syrup, two drachms.
Mix them, and let the patient take two large spoonfuls three times a day.

Antimonials, given in small doses, have likewise a power of diminishing the excitement of the circulation: these are therefore advisable. They may either be combined with medicines of the before-mentioned class, or be given by themselves.* From the uncertainty with which Dr. James's powder and the pulvis antimonialis act, the tartarized antimony may be considered as preferable in many cases.

Warm bathing and fomenting the lower extremities are remedies sometimes employed in fever to produce moderate perspiration. Where these relieve delirium, induce sleep, and are easily borne by the patient, we may be assured of their propriety. Sweating, when excited in fevers by stimulant medicines, is almost sure to prove hurtful. It likewise proves injurious when excited by much external heat; as also where, instead of relieving, it rather increases the frequency of the pulse, the anxiety and difficulty of breathing, the headache and delirium. When sweating is partial, and confined to the superior parts of the body, it will be more likely to prove hurtful than salutary.

If a cough accompanies the fever, and a rawness and soreness in the fauces, together with a tightness at the chest, are present, then,

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Vel,	*Or,*
℞ Liquor. Ammon. Acetatis,	Take Solution of Acetate of Ammonia,
Aquæ Cinnam. āā f. ℥ss.	Cinnamon Water, of each half an ounce.
—— Fontan. f. ʒvj.	Pure Water, six drachms.
Vini Antimon. Tart. ♏x.	Wine of Tartarized Antimony, ten minims.
Spirit. Ætheris Nitrici, f. ʒss. M.	Spirit of Nitric Æther, half a drachm.
Ft. haustus, 6tâ quâque horâ sumendus.	Mix them, and give this draught every six hours.
* ℞ Pulv. Antim. Comp. gr. ij. ad gr. v.	* Take Compound Antimonial Powder, from two to five grains.
Confect. Rosæ, gr. vj. M.	Confection of Roses, six grains.
Ft. bolus, 4tis horis sumendus.	Make them into a bolus, to be taken every four hours.
Vel,	*Or,*
℞ Pulv. Jacob. Ver. gr. iij. pro dos.	Take James's Powder, three grains for a dose.
Vel,	*Or,*
℞ Pulv. Ipecacuanhæ, gr. j. ad gr. ij.	Take Powdered Ipecacuanha, from one to two grains.
Confect. Cort. Aurant. gr. vj. M.	Confection of Orange-peel, six grains.
Ft. bolus.	Form them into a bolus, to be taken every four hours.
Vel,	*Or,*
℞ Antim. Tartarizat. gr. ss.	Take Tartarized Antimony, half a grain.
Aq. Distill. ℥vss.	Distilled Water, five ounces and a half.
Syrup. Croci, ℥ss. M.	Syrup of Saffron, half an ounce.
Ft. mistura, cujus sumat cochl. ij. magna 4tis horis.	Of this mixture give two tablespoonfuls every four hours.

besides pursuing the antiphlogistic plan before advised, we may give demulcents* in frequently repeated doses.

Should a vomiting arise in the course of this fever, and the irritation prove considerable, a saline draught may be taken in the act of effervescence.

Vomiting in fever may arise from a multitude of causes, and require diversified expedients for its relief. If it arise at the commencement, and be accompanied by nausea, an emetic may be exhibited, perhaps, with advantage. The vomiting of an early stage may be quieted by two or three grains of calomel in powder or in pill, to be followed, after a few hours, by a mixture in which about a drachm of carbonate of magnesia is suspended by means of five drachms of mucilage, and as much syrup of orange-peel, in four ounces and a half of cinnamon-water, holding in solution one or two drachms of Epsom salts, a fourth part being taken an hour after the calomel, and every four hours afterwards; or if there be relaxation of the bowels to a considerable extent, six ounces of chalk mixture, in which one drachm of Epsom salts has been dissolved, may be given in the same way. We have far greater confidence in the soothing effects of the alkaline earths thus administered than in those of effervescing draughts; and, truth to say, the aerated (or so-called soda) water is preferable to these last, and may be taken in small quantity from time to time, either alone or flavoured with some pleasant adjunct, as a little lemon-juice, or wine, or even brandy, or medicated with two or three minims of dilute hydrocyanic acid, or with four or five of laudanum. In some cases lime-water, given with half its bulk of milk, will allay this symptom, which at other times is better removed by a few drops of either of the dilute mineral acids. In general we regard the treatment by antacids as best suited to our purpose when there is tenderness of the epigastrium, and a vivid redness of the edges of the tongue; that by acids when there is a more atonic state. If the tenderness at the epigastrium, together with the vomiting, continue in defiance of our treatment, we may apply a few leeches to the pit of the stomach, and afterwards a blister or mustard poultice; a few leeches, also, to the abdomen, over a spot where there was distinct tenderness on pressure, have occasionally relieved the coexistent vomiting. Where vomiting at the advanced period of the disease consists in the rejection by the stomach of nourishment too abundant for its own powers, though not for the wants of the system, in addition to the use of stimulants, as wine and ammonia, it will be useful to sustain the strength in great measure by nutritive enemata till the stomach has become more equal to its office.

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* ℞ Cetacei, ʒij.
Vitel. Ovi, q. s. ad solut.

Dein adde
Aquæ Pulegii, f. ℥iv.
Aceti Scil. f. ʒij.
Syrup. Tolutan. f. ʒiij. M.
Ft. mistura, cujus sumat paululum subinde.

Vel,

℞ Vini Ipecac.
Tinctur. Hyoscyam. ā ʒjss.

Succi Limon. recent. ʒv.
Syrup. Croci. ℥ss.
Misce. Fiat linctus, e quo sumat cochl. minimum unum atque alterum subinde urgente tusse.

* Take Spermaceti, two drachms.
Yolk of an Egg, enough to dissolve the former.

Then add
Penny Royal Water, four ounces.
Vinegar of Squill, two drachms.
Syrup of Tolu, three drachms.
Mix them well together, and let the patient take a mouthful from time to time.

Or,

Take Ipecacuanha Wine,
Tincture of Henbane, of each a drachm and a half.
Fresh Lemon-juice, five drachms.
Syrup of Saffron, half an ounce.
Mix for a linctus, and let one or two teaspoonfuls be taken occasionally when the cough is troublesome.

If antimonials have produced the vomiting, it will be enough to diminish their doses or omit them altogether. When their administration has been judicious, it will not be desirable at once to counteract their effects, even though these may have somewhat surpassed the mark proposed.

In this fever, partial evacuations, such as purging and sweating, which have no tendency to prove critical, often arise. When these happen, we should, by all means, put a stop to them. The former may be checked by the means to be presently spoken of; and the latter, by keeping the patient cool, by washing his body frequently with a sponge dipped in cold water, and giving him refrigerants.

In reference to the complications of typhus, it is to be observed, that delirium alone is certainly not an evidence of the existence of inflammation within the head. The cases in which it requires to be combated by leeches form the exception, and not the rule. If there be heat of skin, or a congested state of the face and scalp, the application of five or six to the temples, or behind the ears, can do no harm, and may effect some good; and either immediately afterwards or at a later time, a blister to the neck will often be found to relieve stupor and delirium, the soothing effects of cold being at the same time resorted to, at least during the night. At a still later period we have known a mild opiate, say eight grains of Dover's powder, procure refreshing sleep, and dissipate for a time both the insensibility and delirium. It is impossible to say on what exact day, or under what precise circumstances, we would give such an opiate as this; but we do not hesitate to express our belief that the mischiefs to be apprehended from the use of opium have been much exaggerated, and that as soon as it becomes a decided aim of our treatment to maintain or to resuscitate the failing powers of the system, we must not neglect to solicit those intervals of repose, or that refreshing sleep, which we can obtain from no drug with so much certainty as from the various preparations of opium.

To Dr. P. Latham belongs the credit of having given more extended currency to the fact of the close analogy which exists between the condition of sleeplessness and wandering, as existing in fever and in delirium tremens; and of having drawn more general attention to the necessity of some parallelism in the treatment, in kind, though not in degree. To his paper, read before the Royal College of Physicians in 1832, and published in the tenth volume of the "London Medical Gazette," we refer our readers for much valuable guidance which our space will not allow us to communicate. Twenty drops of laudanum, or ten grains of Dover's powder, or one of solid opium, are the extreme quantities which it will be safe to exhibit at night, in a single dose, as the only narcotic in the twenty-four hours; and as this amount has in some instances produced a fatal coma, it will be better in practice to give the opiate in divided doses every sixth hour, for thus we may obtain for the patient some snatches of slumber, not so refreshing indeed as prolonged sleep, but procured at a less risk. If there be a tendency to coma, opiates must of course be avoided. It has been recommended, in such cases, to apply a blister to the scalp. We are not, however, to consider our patient as exhibiting signs of coma, merely on account of his dull, insensate state, so long as he can be roused without difficulty. When we can either not arouse him, or not arouse him easily, when there is more or less of stertor and some lividity and bloating of the lips and face, we should not hesitate to apply leeches for the relief of local congestion; while the feeble state of the circulation may require the exhibition of ammonia, a free use of nourishment, and even of wine. The turpentine clyster, too, is, under such circumstances, deserving of a trial. But, alas! the best devised efforts will, under such circumstances, generally fail.

During the insensibility or apathy attending continued fever, it is very common for the bladder to become greatly distended with urine, and incapable of evacuating its contents; while nevertheless there is often a continued dribbling, which may deceive the unwary into the belief that there is simply incontinence. Now the possible existence of this state of things should make us careful to examine the abdomen at least once a day, and whenever a tumour can be felt in the hypogastrium, we should have a catheter introduced, so as to draw off the water; and this operation should be repeated every morning and evening, till the bladder has recovered its tone. This is a measure of no small importance to the well-being of the patient, sometimes soon followed by improvement in his aspect, although there had been no evidence of pain or inconvenience previously. The state of the abdomen, besides, as regards tenderness on deep pressure, and flatulent distension on the reverse, is of much importance, as influencing both the prognosis and treatment.

Although with increased frequency of pulse we have generally in fever some increased frequency of respiration also, genuine pneumonia is a rare accompaniment of typhus; the most common affection of the lungs having much more of a congestive than of an inflammatory character. The position of the patient on his back determining the course given to the fluids by gravitation, causes the posterior portions of the lungs to be much gorged in those severely affected, even during life, and still more so after death. If, however, with oppression of the breath we discover in spots over the chest the dulness on percussion, and the dry crepitating sound of pneumonia, and if at the same time there be present a viscid mucous expectoration, whether white or rust-coloured, it will be well to take a few ounces of blood from the parts where these physical signs are detected, either by means of leeches or of cupping. Dulness on percussion, if unaccompanied by either dry crepitation or bronchial respiration, is not to be regarded as indicative of inflammation; and the less so, the more dependent the situation in which it is found. The pulmonary affection of typhus, be it what it will, whether bronchitis or typhoid pneumonia, having little in common with genuine unmodified pneumonia, requires as a general rule, not depletion, and antimonial medicines, but stimulating expectorants; and of these carbonate of ammonia, in doses of from three to five grains given in the decoction of senega, has received the highest testimony in its favour. Nor will it be improper that the exhibition of this medicine should quickly follow, or even accompany, the small local depletions which are sometimes required. In cases where the difficulty of breathing is considerable, blisters to the chest may follow the application of leeches; but for the most part they may be dispensed with, without detriment to the patient.

If a purging arises, it is to be restrained by having recourse to astringents *, as advised below, or to the pill, containing two grains and a half of Dover's powder; but in the progress of the disease, if a gentle diarrhœa takes place, and seems likely to prove critical, it should by no means be checked.

To either of these draughts, from three to five drops of laudanum may be added in an advanced stage of the disease, this last being estimated rather by the condition of the patient than by the number of days from the commencement of the attack. In this, as in other forms of diarrhœa, it is better to stop the spontaneous action of the bowels altogether, and to relieve them occasionally by three or four drachms of castor oil given every third or fourth day. In this way the evacuation is more complete, and tends more to improve the character of the excretions, than if they are allowed to act moderately of their own accord. Upon this plan, also, their action is more under control.

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* ℞ Confection. Aromaticæ, ʒss.
Aquæ Cinnamomi, ℥jss.
Ft. haustus sextis horis sumendus.

Vel,
℞ Misturæ Cretæ, f. ℥iv.
Tinct. Catechu, f. ʒij.
Aq. Cinnam. f. ℥ij.
Ft. mistura, cujus sumat cochl. ij. magna sextis horis.

Vel,
℞ Decocti Hæmatoxyli, ℥j.
Aquæ Calcis, ℥ss.
Ft. haustus ut supra dandus.

* Take Aromatic Confection, half a drachm.
Cinnamon Water, an ounce and a half.
Make a draught, to be taken every six hours.

Or,
Take Chalk Mixture, four ounces.
Tincture of Catechu, two drachms.
Cinnamon Water, two ounces.
Mix them. Two tablespoonfuls may be taken every six hours.

Or,
Take Decoction of Logwood, an ounce.
Lime Water, half an ounce.
Make a draught, to be given as above.

When tenderness is found on firm and deep pressure made on the right side of the abdomen, or in any other part, a few leeches should be applied, to be followed by a poultice. If there be persistent distension of the abdomen from flatulence, a large blister should be resorted to, either after the leeches or independently of them. Yet in this case, as in that of affection of the head or chest, it will not be incongruous, during the use of local depletion or revulsion, to continue the employment of means of general support, and even of stimulants. The benefits arising from the application of leeches to the abdomen are not so well established as to warrant a recourse to them with over haste, or in considerable numbers. They should be resorted to by the practitioner cautiously at least, if not reluctantly. Dr. Ormerod offers a good example to us, when he says, that leeches were not applied unless some tender point of the abdomen was discovered; yet a very slight degree of pain, with a red tongue, and the least sharpness of the pulse, were indications to apply leeches; though wine had to be given at the same time, so as to enable the patient to bear the depletion. On the other hand, a much greater degree of pain was often left alone, because no other symptoms were present to imply that the pain depended on any serious lesion. For pain in the abdomen, apparently unconnected with any organic mischief, the application of a large linseed meal poultice to the abdomen is so well suited, that it should not be omitted, where the symptoms are not such as to justify that of a blister.*

When the fever is somewhat advanced, and symptoms of debility become more urgent, a moderate use of wine becomes highly necessary, and may not only be given in the form of negus, but likewise be mixed with either sago, gruel, panado, or arrow-root, and thus administered as food. Wonderful, indeed, are the effects produced by wine in typhus fever, when given in the proper stage; as we often see persons recover by a free use of it under unpromising circumstances.

In advising a use of wine, I must caution the practitioner not to run into excess, and over-stimulate the patient, as this might destroy him. Wine, although a very grateful and convenient stimulus, is very liable to be abused by being given in too great a quantity, and at too early a period of the disease. In ordinary cases, we may begin with four ounces and advance to half a bottle in a day, and this may be regarded as a moderate quantity for an adult; but in some cases a whole bottle may be necessary, and in some a little more; but it should always be given with an equal part of water. The best rule is to proportion the quantity of wine to the degree of debility present, the age of the patient, and the effect produced on him by it. The state of the pulse is our best guide in giving wine; we are right in continuing its use, and increasing its quantity, as long as the pulse is not unduly accelerated, or its frequency diminished, under its employment.

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* Clinical Observations, pp. 207, 208.

Simultaneously with or somewhat before the allowance of wine just mentioned, it will be right to improve the diet, by giving either good beef-tea, or chicken or mutton broth, freed from fat, of such strength and in such quantity as circumstances seem to require, and as are found beneficial on trial. A pound of lean meat, put into two pints of water, kept gently simmering till the liquid is reduced to one half, yields tea or broth of good strength, and in proper quantity for the day's consumption. This may be given either cold or warm, as most agreeable to the patient, in small quantities at frequent intervals throughout the twenty-four hours. It may, too, be made more palatable by the addition of a little salt and spice. The use of a moderate amount of salt daily should be encouraged throughout.

While nourishment, and wine, and even brandy, are freely given to the patient, we have in ether and ammonia the most powerful medicines for keeping up the languishing circulation, and carrying on life till time shall put an end to the disease. Thus, half a drachm of the spiritus ætheris sulphurici compositus of the Pharmacopœia, may be given every four or six hours, in camphor mixture; or five grains of sesquicarbonate of ammonia, dissolved in an ounce and a half of decoction of bark, or when the bowels are irritable, in decoction of logwood, may be administered with the same frequency. Dr. Corrigan declares his belief that in some cases life had been preserved by means of ether, in quantities of two drachms given every two hours, in the form of injection, till the power of swallowing, previously lost, had been restored to the patient. He encourages to perseverance in active treatment, by the remark, that in some instances, as in that of persons suffering from fever in Dublin, in 1846, the patient, in the dying moment, was sinking from a mere lesion of function, and that even then recovery was not hopeless, since clinical observation had shown that an individual apparently moribund, might on the next day, or within twenty-four hours, be out of danger. Other forms of stimulants will be found below.*

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* ℞ Mosch. gr. x.
Aq. Cinnam. f. ℥jss.

Æther. Sulphuric. ♏xv.
Tinct. Opii, ♏v. M.
Ft. haustus, ter in die sumendus.

Vel,

℞ Ammoniæ Sesquic. gr. v.

Camphor. gr. iv.
Opii, gr. ¼.
Confect. Aromat. q. s. M.
Ft. bolus, 6tâ quâque horâ sumendus.

* Take Musk, ten grains.
Cinnamon Water, one ounce and a half.
Sulphuric Æther, fifteen minims.
Tincture of Opium, five minims.
Mix them for a draught, to be taken three times a day.

Or,

Take Sesquicarbonate of Ammonia, five grains.
Camphor, four grains.
Opium, a quarter of a grain.
Aromatic Confection, a sufficiency to form the whole into a bolus, to be taken every six hours.

If this fever is likely, or threatens in its progress, to degenerate into typhus gravior, we should administer the mineral acids, but more particularly the muriatic, in such doses as the patient is capable of bearing. To prevent its affecting the stomach and bowels, a few drops of tinctura opii may be added to each dose. An infusion of cascarilla, calumba, or orange-peel, may be employed as the vehicle, or we may give the acid in a little wine and water.—See TYPHUS GRAVIOR.

In an advanced stage of this disease, it sometimes happens that, in addition to a profuse secretion of viscid saliva, little white ulcers, or aphthæ, appear in the inside of the mouth and fauces. In such cases, a gargle composed of borax, honey, and an infusion of roses, should be used three or four times a day.

When the fever goes off, and the patient has somewhat regained his strength, he may take daily exercise on horseback, or in a carriage; and in order to remove the irritability and weakness which are left behind, he should enter on a course of the cinchona bark, and other tonics. After a little time the cold bath will be a proper remedy, if the season of the year is such as to admit of it. If the appetite does not readily return on the cessation of the fever, stomachic bitters*, with sulphuric acid, will be proper. — See DYSPEPSIA.

The extreme facility with which a relapse is brought on by indiscretion in the use of food, or by too much exertion, requires the continued watchfulness of the medical attendant over the convalescence of his patient. They who would make a sure progress

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Vel,

℞ Misturæ Moschi,
—— Camphoræ, āā f. ℥iij.

Æther. Sulphuric. f. ʒij. M.'
Ft. mistura, de quâ capiat cochl. ij. larga tertiâ vel quartâ quâque horâ.

* ℞ Infus. Gentian. Comp. f. ℥v.

Tinct. Card. C.

——Cascarillæ, āā f. ℥ss. M.

Capiat cochl. ij. ampla mane, horâ meridianâ, et vespere.
Adde, pro re natâ,
Acid. Sulphur. Dilut. ♏vj.

Vel,

℞ Infus. Cort. Cascaril. f. ʒx.

Tinct. Gentian. C.
—— Cinnam. C. āā f. ʒj.

Acid. Sulph. Dilut. ♏x.

Ft. haustus, ter in die sumendus.

Or,

Take Musk Mixture,
Camphor Mixture, each three ounces.
Sulphuric Æther, two drachms.
Mix them. The dose may be two tablespoonfuls every three or four hours.

* Take Compound Infusion of Gentian, five ounces.
———— Tincture of Cardamoms,
Tincture of Cascarilla, each half an ounce.
Mix them, and give two tablespoonfuls morning, noon, and evening, adding occasionally six minims of the Diluted Sulphuric Acid.

Or,

Take Infusion of Cascarilla, ten drachms.
Compound Tincture of Gentian.
———————— Cinnamon, each one drachm.
Diluted Sulphuric Acid, ten minims.
Make them into a draught, which is to be taken three times a day.

towards health must be content to make a gradual and slow one, especially at the commencement; they must not indulge to the full the cravings of appetite, nor satisfy the longings for a return to their ordinary pursuits.

For the sake of others as well as for his own, a person labouring under continued fever, or indeed under any infectious disease, should be placed in a large apartment and in a bed only so far protected by curtains as may be necessary for keeping off any direct draught of air, and for screening him from any source of too bright light. The object of these measures is to prevent concentration of the noxious vapours around him, by allowing them space and opportunity to diffuse themselves so as to become diluted by admixture with abundance of pure air. At the same time means should be adopted and kept in constant operation for effecting a continued renewal of the air of the room. A brisk fire, not necessarily a large one, is the most generally available ventilator, and in cool weather should be kept burning both by night and day. If a strong draught is thus kept up, there will be the less reason to fear that the room will be made too hot. Often it will be safe and advisable to open to a greater or less extent one or more of the windows opposite the grate in which the fire is burning, while, if the weather be too hot for a fire, a change of air is secured by opening the same or different windows, both at top and bottom. It is best to keep the door closed, so as to separate, as far as possible, the infected apartment from the rest of the house. All the discharges of the patient should be thrown away at some distance as soon as they are rendered, and the vessel washed with boiling water.

Another essential precaution consists in frequently changing the body and bed-linen of the patient, which, as soon as removed and carried away, may be put into a tub and covered over with water, into which a handful of lime or potash may be thrown, for the purpose of detaching the animal matters with which they may

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Vel,	*Or,*
℞ Cort. Cinchonæ contus. ℥j.	Take Peruvian Bark bruised, one ounce.
Acid. Sulphur. dilut. ʒij.	Dilute Sulphuric Acid, two drachms.
Aq. Fontan. Ojss.	Pure Water, one pint and a half.
Coque ad Oj. col. dein adde	Boil these slowly till reduced to one pint, then strain off the liquor, and add
Tinct. Calumbæ, f. ℥j. M.	Tincture of Calumba, one ounce.
Ft. decoctum, de quo sumat cochl. iij. magna quartis horis.	Mix them, and of the decoction let three tablespoonfuls be taken every four hours.
Vel,	*Or,*
℞ Cort. Cinchonæ in Pulv. trit. ℥ss.	Take Peruvian Bark, reduced to a coarse powder, half an ounce.
Aq. Bullient. f. ℥vj. post horam Colat. adde	Boiling Water, six ounces. Infuse them for an hour, strain off the liquor, and add
Tinct. Cort. Aurant. f. ʒij. M.	Tincture of Orange-peel, two drachms.
Ft. infusum, cujus sumat cochl. larga iij. quartis horis.	Mix them, and let three tablespoonfuls be taken every four hours of this infusion.

be impregnated. In a few words, unremitting regard to ventilation, and the strictest attention to cleanliness in all its parts, constitute the whole secret of evading contagion. Fumigations with nitric or muriatic acid, in a state of vapour, or using the chloride of lime, or that of soda in solution, as recommended under the succeeding head of Typhus Gravior, may, however, be employed as auxiliaries.

As circumstances may occur for rendering it necessary to remove patients labouring under typhus fever to some distance, it is important to know that this may be effected without subjecting them to any risk. Indeed, considerable benefit has been derived on such occasions by conveying the sick in open carriages, or spring waggons, for several miles, freely exposed to the air.

Other precautions for the protection of friends and attendants consist in such observances as tend to guard them against the deteriorating influence of their self-devotion upon their own health. Thus where this is practicable they should so relieve one another, that each may take food and rest with regularity and away from the patient's room. Their diet should be nutritious, and even generous, but not too heating; and long intervals between meals should be carefully avoided. Nor should an attention to the toilet and to daily exercise, for however brief a time in the open air, be altogether omitted. In the sick room, proximity to the patient should be avoided at all times, except when some service is to be performed for him which makes it necessary; and even then it will be prudent to choose the windward side of his bed, and to avoid inhaling his breath and the emanations from him. If any farther prophylactic be needed, it is most likely to be found in quinine, which might be taken twice a day, in two-grain doses.

TYPHUS MITIOR, OR NERVOUS FEVER.

TYPHUS is derived from τυφος, stupor, a degree of sensorial affection which generally supervenes, sooner or later, in most continued fevers, and which is universally allowed to be a prominent symptom of that to which this name has been especially applied. Typhus mitior may be distinguished from typhus gravior at its commencement, by the attack being more gradual, and the symptoms much milder: in the progress of the disease, by the absence of those symptoms of prutrescence enumerated in typhus gravior; and by its being accompanied with less heat and thirst, and less frequency of the pulse.

Typhus mitior generally comes on with a remarkable mildness in all its symptoms; and although the patient experiences some trifling indisposition for several days, still he has no reason to suspect the approach of any severe disease. At first no rigors are perceived, there being only a slight chilliness, which is not succeeded by any increase of heat or redness of the face; on the contrary, it is unusually pale and sunk. He perceives, however, some degree of lassitude, and apparently of debility, with anxiety, dejection of spirits, sighing, and a loathing of food; and towards evening these affections are somewhat increased.

In the course of a few days, and as the disease advances, there arise a difficulty of breathing, oppression at the chest, pains in the head, accompanied with a confusion of ideas: there is great depression of strength apparently, even occasionally to fainting, whenever the patient attempts to sit up; the tongue becomes dry, and may be red or covered with a brownish fur; the pulse is small, feeble, and generally, but not always, frequent; it now and then intermits; cold clammy sweats break out on the forehead and backs of the hands, while the palms glow with heat; the urine is pale and watery like whey; the whole nervous system is much affected with tremors and twitchings; involuntary motions of the muscles and tendons arise; the patient picks at the bed-clothes, and either mutters to himself or talks incoherently. There is seldom, however, any very high degree of delirium, nor is this fever ever attended with violent ravings; but there is usually a dilatation in the pupils of the eyes, and a state expressed by the term coma vigil.

This brief sketch will serve for the recognition, under its most distinctive aspect, of that variety of continued fever which has been termed typhus mitior. Synochus and typhus, as we have already observed, are apt to shade into one another, so as to render it difficult to draw a line of demarkation. They are, in fact, varieties of the same disease, and have much of their course, as well as their causes and the principles of their treatment, in common, all of which have been fully discussed under the head of the former disease.

We shall speak of typhus gravior more at length, not on account of the difference of its nature, but because the greater violence of its symptoms, and the tendency to putrescency, may demand some modification of the treatment. We believe that a more general attention to cleanliness and ventilation have rendered it of late years far less common than formerly.

TYPHUS GRAVIOR, OR MALIGNANT AND PUTRID FEVER.

This fever takes its name from the malignancy of its nature, and the symptoms of putrefaction which are to be observed towards its close. It is to be readily distinguished from the inflammatory, by the smallness of the pulse, the sudden and great debility which ensues on its first attack, and the livid flush of the countenance; and in its more advanced stage, by the petechiæ, or purple spots which come out on various parts of the body, and the fetid stools which are discharged; and it may be distinguished from typhus mitior by the great violence of all the symptoms on its first coming on.

On the first coming on of typhus gravior, the person is seized with languor, dejection of spirits, amazing depression of muscular strength, and apparently great debility; universal weariness and soreness; pains in the head, back, and extremities, and rigors; the eyes appear full, heavy, yellowish, and often a little inflamed; the temporal arteries throb violently; the tongue is dry and parched; respiration is commonly laborious, and interrupted with deep sighing; the breath is hot and offensive; the urine is crude and pale, the body is costive; and the pulse is usually quick and small, and now and then fluttering and unequal. Sometimes a great heat, load, and pain, are felt at the pit of the stomach, and a vomiting of bilious matter ensues.

As the disease advances, the pulse increases in frequency (beating often from 100 to 130 in a minute): there is apparently vast debility; great heat and dryness of the skin; oppression at the breast, with anxiety, sighing, and moaning; the thirst is greatly increased, the tongue, mouth, lips and teeth, are covered over with a brown or black tenacious fur; the speech is inarticulate, and scarcely intelligible; the patient mutters much; and delirium arises. The fever continuing to increase still more in violence, symptoms of putrefaction show themselves: the breath becomes highly offensive; the urine deposits a black and fetid sediment; the stools are dark, disagreeable, and pass off insensibly; hæmorrhages issue from the gums, nostrils, mouth, and other parts of the body; livid spots, or petechiæ, appear on its surface; the pulse intermits and sinks; the extremities grow cold; hiccups ensue; and death at last closes the tragic scene.

When this fever does not terminate fatally, it generally begins, in cold climates, to diminish about the commencement of the third week, and goes off gradually towards the end of the fourth, without any very evident crisis; but in warm climates it seldom continues above a week or ten days, if so long. Our opinion as to the event is to be formed by the degree of violence in the symptoms, particularly after the appearance of petechiæ, although, in some instances, recoveries have been effected under the most unpromising appearances. An abatement of febrile heat and thirst, the tongue becoming moist and clean, a gentle moisture diffused equally over the whole surface of the body, loose stools, turbid urine, the pulse being stronger, but less frequent, a free secretion of saliva, tumour and suppuration of the parotid, axillary, or inguinal glands, a scabby eruption about the mouth, and the delirium and stupor abating, or going off, may be regarded in a favourable light. On the contrary, great muscular debility, very laborious respiration, difficulty of deglution, stupidity, and listlessness of the eyes, perpetual writhing of the body, petechiæ of a livid colour, with dark, offensive, and involuntary discharges by urine and stool, fetid and cadaverous sweats, hæmorrhages, subsultus tendinum, and hiccups, denote the almost certain dissolution of the patient.

The tendency to hæmorrhage from the different mucous membranes, and the actual occurrence of extravasations of blood in the form of small spots called petechiæ, or of larger collections named vibices, which mark this disease, are owing no doubt mainly to the altered physical characters of the blood observed to exist in it. The sensible qualities of the blood in typhus fever are thus described by Dr. Christison, in his article in the "Library of Medicine," and it is to the variety now under consideration that his observations are more especially applicable. "The blood is not bright, but on the contrary very dark, flows sluggishly from the vein, coagulates loosely, and seldom shows any appearance of a buffy coat. These characters become more and more marked as the disease advances; and in the later stages of bad cases the blood coagulates so loosely as to be tremulous, brittle, and almost to resemble ill-made currant jelly. It also alters materially its chemical constitution, becoming much poorer in all its solid contents, but especially in colouring matter and saline materials." Simon, in the first volume of his "Chemistry," notes, among the principal results of Messrs. Andral and Gavarret's researches on the blood in typhoid fever, "that the fibrin never rises perceptibly above the normal standard. It often remains at the normal height, and is still more frequently below it." Dr. Hodgkin speaks of the depraved condition both of the solids and fluids often observed in fevers of the worst description, especially towards their termination, the secretions being altered in character and extremely offensive, the solids readily producing sloughs, and where this is not the case feebly retaining the circulating fluids, and the whole body, when death has taken place, undergoing decomposition with extraordinary rapidity, as characteristic of that state of putridity, the existence of which he conceives to have been somewhat too hastily disallowed by modern writers.

These changes in the blood and solids we note here as prominent features of the variety of fever now under discussion: for the morbid appearances we refer to the head of Simple Continued Fever.

The most general cause which gives rise to this disease is contagion, applied either immediately from the body of a person labouring under it, or conveyed in clothes, or merchandise, &c.; but possibly it may be occasioned by the effluvia arising either from animal or vegetable substances in a decayed or putrid state. A want of proper cleanliness, accumulated human exhalations, and contaminated air, may prove predisposing causes of this fever; hence it prevails in the houses of the poor, in hospitals, gaols, camps, and on board of ships, especially when such places are much crowded, and the strictest attention is not paid to a free ventilation and due cleanliness.

Those of lax fibres, and who have been weakened by any previous debilitating cause, such as poor diet, long fasting, hard labour, continued want of sleep, too free a use of enervating liquors, and an indulgence in sensuality and other debaucheries, are most liable to attacks of it. We are therefore to look on these also as so many causes, which induce that state of predisposition readily to be influenced by the operation of contagious miasms.

It has been denied by some physicians of the present time, that either the plague, yellow fever, or typhus, are contagious diseases; and it is true, indeed, that we cannot, in every case, ascertain that the complaint originated from a communication with diseased persons; nor will the actual communication always produce fever; many predisposing causes are requisite; and, moreover, the human constitution is evidently less susceptible of diseases at one time than at another. Whoever has paid proper attention to the symptoms of typhus, may, however, be induced readily to conclude, that the surrounding atmosphere, to an extent more or less great, particularly in small, close, unventilated rooms, may become sufficiently impregnated with the effluvia continually exhaling from the diseased body, to infect other persons with a similar disease. In a pure air, in large and well-ventilated apartments, where the dress of the patient and bed-clothes are frequently changed, all excrementitious discharges promptly removed, and an attention paid to cleanliness in general, neither typhus, under any form, plague, nor dysentery, are usually contagious, or under such circumstances are rarely communicated from one person to another.

Some writers have supposed infants to be as liable to fevers as adults, and from the same causes; but I cannot agree with them; for I have observed that infants do not readily take fevers, although exposed for a long time to that contagion which has appeared to affect adults around them: and every physician who attends lying-in hospitals, must not only have known many infants suckled without injury through the whole stage of bad fevers, from which their mothers have recovered; but also, in other instances, sucking greedily within an hour or two of their mothers' death.

On the very first appearance of any of the symptoms of this fever, we should immediately attend to them, and endeavour to prevent any bad consequences from ensuing, as they will never go off of themselves, but will continue to increase, until a disease of a most dangerous nature takes place. This being the case, we should resort to proper remedies at the first onset. The most proper will be an emetic of about fifteen grains of ipecacuanha, with one grain of tartarized antimony, which may be worked off with an infusion of the flores anthemidis. An emetic at the commencement of the disease is a very important article, and the clearing of the stomach is not the only good effect to be expected from this remedy. After its operation is over, the bowels may be opened with some gentle purgative.* Possibly a few grains of hydrargyri chloridum, combined with jalap, or the extract of colocynth, may be preferable to any other. Should the desired effect not be produced by these medicines, an aperient clyster may be administered.† Throughout the course of the disease, the patient in no case should be more than two days without a stool; for a great deal of fæces are produced in fever, although little food is taken; and costiveness is apt to induce an increase of heat, and affections of the head, as delirium, &c.

These steps being pursued, and the nature of the disease clearly ascertained, I would advise the ablution of the patient with cold water, or rather a general affusion, provided the heat of the body is steadily above the temperature of health. The good effects of this mode of practice I have often experienced.

In the early stage of typhus, the superior efficacy of affusion over ablution is unquestionable; its operation extends beyond the mere abstraction of heat from the surface: it acts powerfully on the nervous system. Besides its effectually removing the uneasy sensation of heat in the beginning of febrile diseases, and thus indirectly recruiting the animal powers, it induces sleep. We well know that when any disagreeable sensation is removed, sleep soon follows, and it happens so in this instance. After the fourth or fifth day of fever, the influence of both affusion and ablution is greatly diminished, and not sufficient to interrupt the morbid actions; at a still more advanced stage the heat is removed nearly in the same degree by washing the surface of the body with a wetted sponge, or cloths dipped in water, as by pouring cold water on the naked body; and the patient is relieved nearly the same by one mode of treatment as by the other. Thus much for the comparative merits of affusion and ablution.

In the advanced stages of typhus gravior, as well as of typhus mitior, where either the affusion of water of a low temperature, the immersion of the patient, or even the sprinkling his body with cold water, might in the least endanger our arresting the movements of life, we should always take the precaution of giving a glass of warm wine, or some other powerful cordial, immediately after employing the remedy.

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* ℞ Mann. Optim. ʒij.
Potassæ Tartrat. ʒiij.
Infus. Sennæ Comp. f. ℥jss. M.

Ft. solutio pro dos.

Vel,

℞ Hydrargyr. Chlorid. gr. v.

Extract. Colocynth. C. gr. x.

Fiant pilulæ iij. pro dos.

† ℞ Decoct. Malvæ Compos. f. ℥xij.

Sodæ Sulphat. ℥j.
Ol. Olivæ, f. ℥j. M.
Ft. enema.

* Take Manna, two drachms.
Tartrate of Potass, three drachms.
Compound Infusion of Senna, one ounce and a half.
Mix them for a dose.

Or,

Take Chloride of Mercury, five grains.
Compound Extract of Colocynth, ten grains.
Make the mass into three pills, to be taken at once.

† Take Compound Decoction of Marshmallows, twelve ounces.
Sulphate of Soda, one ounce.
Olive Oil, one ounce.
Mix them for a clyster.

"It cannot be rationally denied," says Dr. Christison, in his article on Continued Fever, before quoted, "that the fever treated by Dr. Currie and his earlier imitators, was susceptible of being cut short in its course by the cold affusion. And there seems no mode of reconciling the discrepancy of the facts relative to the utility of this remedy, except by referring it to those hidden differences in the epidemic constitution of fever, as well as other diseases, of which, though we cannot well indicate their precise nature, we may trace the operation in a variety of equally interesting circumstances in their history. The time, then, may come round again, when the cold affusion will arrest continued fever; so that it ought not to be forgotten among the remedies to which this property has been assigned. For some years past the continued fevers of this country have assumed more and more the typhoid type, and the treatment has in late epidemics properly," as we think with the author, "fallen into desuetude."

It is no uncommon occurrence for the symptoms to run very high at the commencement of this fever, so as to give it rather an inflammatory appearance, which has induced practitioners at times to draw off blood by opening a vein; but, except in those cases where there is great intellectual derangement, considerable determination of blood to the head, or symptoms of venous congestion therein, venesection will not be requisite. In those cases where they prevail, no doubt the drawing off blood (proportioning the quantity to existing circumstances), at an early stage of the disease, will be proper and serviceble; and should the cerebral congestion not be relieved, or the fever be of some days' duration, we may afterwards apply six or eight leeches to the temples.

The prostration of strength, which ensues in the early stage of typhus, has by some physicians been considered as chiefly occasioned by an undue quantity of blood being determined to the vessels of the brain; and under this idea, when called to a person labouring under typhus fever, however great the depression of strength may appear, if the pain in the head be violent, they either order the temporal artery to be opened, where it can be done conveniently, or direct eight or ten leeches to be applied to the forehead and temples, and be afterwards allowed to bleed freely.

Whatever is given to the patient for drink ought to be cold, and gently acidulated with the juice of oranges or lemons. The mineral acids likewise are, beyond all doubt, better remedies in this and other malignant diseases, than we have been accustomed to regard them; and from having employed them, but more particularly the muriatic, for several years with very great success in typhus gravior, I can vouch for their efficacy. My usual plan of proceeding is as follows: — Having relieved the stomach by a gentle emetic where nausea prevails, cleared the bowels of their feculent contents by a proper dose of calomel joined with a few grains of the extract. colocynth. c., and subjected the patient to cold affusion, when the circumstances already noticed have admitted of it, I prescribe for adults ten or twelve drops of the muriatic acid, guarded with five drops of tinctura opii; and as a vehicle I employ about an ounce and a half of water, of an infusion of cascarilla, calumba, or orange-peel. This draught I direct to be repeated every four hours, gradually increasing the quantity of the acid in each to eighteen or twenty drops, or more. When the fever begins to decline, or to show remissions, I substitute a decoction of cinchona instead of the infusion of calumba, cascarilla, or orange-peel.

A material circumstance to be attended to, not only at the commencement of this fever, but through its whole course, is to cover the patient lightly with bedclothes, and to keep his apartment cool and properly ventilated, by allowing a regular and free admission of fresh air into it. Fumigations in the manner hereinafter noticed will also be advisable. Cleanliness, in the strictest sense of the word, is to be most carefully attended to; and, therefore, not only the bed and body linen should be changed frequently, but whenever a motion takes place, it ought immediately to be removed.

It is much better to trust to ventilation and cleanliness for the removal of unpleasant smells than to try to overpower them by means of camphor or vinegar. If, however, we must have recourse to scents, lavender water and eau de Cologne are quite as effectual, and much more refreshing and agreeable.

The viscid phlegm which collects about the tongue and teeth, may be carefully scraped off by a knife, or gently wiped away with a bit of flannel dipped in vinegar, or salt and water.

Although there is not usually any regular crisis to this fever, still nature sometimes endeavours to throw it off by a gentle moisture diffused equally over the whole surface of the body; to promote this, we may advise some gentle diaphoretic[*]; but we are carefully to guard against exciting profuse sweats, which would certainly prove prejudicial.

In the first stage of the disease, where there are local determinations, and there arises any violent affection of the head, or difficulty of breathing, it has been usual to apply a blister in the neighbourhood of the part affected. Where stupor prevails, with little or no delirium, we need not employ it; but where the delirium, in the first stage of the disease, is violent, and accompanied with great wildness of the eyes, so as to threaten a phrenitis, we may recommend it, and probably it will afford relief. In an advanced stage, or after symptoms of putrescency have become obvious, the application of a blister would be highly improper, as mortification is apt to attack the blistered parts. Rubefacients are preferable, and may be applied to a great extent of surface at short intervals.

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[*] ℞ Camphoræ, gr. iv.
Pulv. Ipecac. gr. j.
Confect. Aromat. gr. v. M.
Ft. bolus, 6tis horis sumendus.

[*] Take Camphor, four grains.
Powder of Ipecacuanha, one grain.
Aromatic Confection, five grains.
Make them into a bolus, which may be taken every six hours.

In typhus gravior, as well as the milder form of the disease, the application of cold to the head might probably be substituted for a blister with advantage in those cases where there prevails either coma or delirium, or there is a great pain in the head, with much restlessness. Having had the head properly shaved, a large towel, dipped in the coldest water, may be applied all over it, renewing the process frequently until the patient is easier, the heat less, and a disposition to tranquil sleep has taken place. At first it will be necessary to repeat the operation at short intervals, and it will be desirable to do it with such quickness and perseverance as to produce some degree of shivering. In severe cases, we may substitute the application of powdered ice, enclosed in a bladder, to the shaven scalp.

Very various expedients have been resorted to for preventing or correcting those vitiated conditions of the blood which are observed to arise in the course of malignant typhus, and to which, in part at least, the tendency to the production of petechiæ, of vibices, and of passive hæmorrhages, must be referred. Thus highly oxygenized bodies, as nitrate and chlorate of potass, have been given with the view of communicating oxygen to the blood, and of imparting to it its natural arterial aspect, which latter effect they are found to produce on venous blood, and on the blackened blood of patients labouring under this form of fever, when mixed with it out of the body, and which may be presumed in some measure to take place when they are taken medicinally, although, as they may be detected undecomposed in the urine of persons who have swallowed them, their action must be independent of the liberation of the oxygen which they contain. The nitrate of potass[*] may be exhibited from the commencement; the chlorate[†], as more stimulating, is better suited to the more advanced stages of the disease. Or, again, instead of either of these substances alone, we may adopt the saline treatment recommended by Dr. Stevens, who directs twenty grains of common salt with thirty grains of carbonate of soda, and eight of chlorate of potass, to be dissolved in water, and taken every second or third hour. His object is to neutralise acidity, to restore to the blood those saline matters in which it is found deficient, and to bring back its natural colour. We believe that under none of these forms has the treatment by saline medicines alone realised the expectations raised in its favour; yet we think that both nitrate and chlorate of potass may often be advantageously combined with tonic medicines, when there is much heat of skin, and dryness of the mouth and tongue, while the pulse indicates great and increasing debility. As regards the administration of common salt, we agree with Dr. Copland in thinking that some evil may arise from the total privation, during the early days of fever, of a substance which appears so necessary to the maintenance of health, and we find in this consideration a reason for taking care that throughout the disease the ordinary consumption of it in the diet should be continued. The quantity required for this purpose would be small, and might be added to any of the ordinary drinks without rendering them unpalatable. No opportunity has occurred to us of applying the test of experience to this plan, nevertheless the hint is a valuable one, and worthy of attention.

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[*] ℞ Potassæ Nitrat. gr. x.
Mistur. Camphor. ʒxj.
Syrup. Tolutan. ʒj.
Misce. Fiat haustus ter die sumendus.

[†] ℞ Potassæ Chlorat. ℈j.
Aquæ Cinnamomi, ʒxj.
Tinctur. Aurantii, ʒj.
Fiat haustus tertiâ quâque horâ capiendus.

[*] Take Nitrate of Potass, ten grains.
Camphor Mixture, eleven drachms.
Syrup of Tolu, one drachm.
Make a draught, to be taken thrice a day.

[†] Take Chlorate of Potass, one scruple.
Cinnamon Water, eleven drachms.
Tincture of Orange-peel, one drachm.
Make a draught, to be taken every three hours.

For the correction of the supposed putrescent condition as manifested in the blood, in the secretions, and indeed in the solids also, antiseptic medicines have been recommended. The most powerful of these are chlorine in its aqueous solution, and the chlorides of soda and lime; yeast also, and liquids impregnated with carbonic acid, partake of the same property, though in an inferior degree. The liquor sodæ chlorinatæ* of the London Pharmacopœia, and the chloride of lime†, are better forms than the solution of chlorine; the second of these has been found useful in an advanced stage, where there was diarrhœa, with abdominal distension, much heat of skin, and petechiæ. Of chlorine water, Dr. Christison, writing in 1840, says, that at first employed as an antiseptic when putrescency of the fluids was a received dogma in the pathology of fever, it has been more recently recommended as a stimulant, or a specific against the typhoid state; but no satisfactory evidence has hitherto been adduced in its favour.

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* ℞ Liquor. Sodæ Chlorinatæ, ♏xv. Aquæ Pimentæ, ℥jss. Misce. Fiat haustus quartâ quâque horâ sumendus.	* Take Solution of Chloride of Soda, fifteen minims. Pimenta Water, an ounce and a half. Make a draught, to be taken every four hours.
† ℞ Calcis Chlorinatæ, gr. x. Syrup. ℥ss. Aquæ Puræ, ℥iijss. Tinctur. Calumbæ, ʒij. Misce. Sumat cochl. j. magnum secundis horis.	† Take Chloride of Lime in powder, ten grains. Syrup, half an ounce. Water, three ounces and a half. Tincture of Calumba, two drachms. Mix. A tablespoonful to be taken every two hours.

Of yeast he speaks as not having come into so general use that any opinion can be formed of its utility. Carbonic acid in solution is at once refreshing to the patient, and has a calming influence; it may be given throughout as it exists in aerated, or as it is commonly called soda water, and this may be drunk at first alone, or slightly acidulated, as most agreeable to the patient, and subsequently with wine. No objection exists to the allowance of spruce, or, when stimulants are necessary, to fermented liquors in the form of bottled porter or stout, or occasionally to champagne.

Other remedies for restraining hæmorrhage, for supporting the strength, and opposing the putrefactive tendency, have been sought for in the vegetable acids, as more especially the acetic and citric; in the mineral acids, as the sulphuric and nitric, as well as the hydrochloric, and the combination of the last two. To fulfil the first of these indications the acetate of lead has been given*, either combined with opium in the shape of a pill, or dissolved in acetic acid in a draught, with a few drops of laudanum. With the same intention, also, turpentine has been employed†, and turpentine enemata have been besides resorted to for the relief of flatulent distension; or, again, lotions of turpentine‡ have been applied to the abdomen as rubefacients and counter-irritants. The means of supporting the patient have been sought in the various vegetable tonics, as the infusions of calumba, gentian, cascarilla, arnica, the decoctions of bark and of logwood, and disulphate of quinine. These infusions or decoctions, according to the stage of the complaint, are made vehicles either for saline medicines, as for the liquor of acetate of ammonia diluted with water, or for nitre, or for chlorate of potass. Again, they may at another period be given with any of the mineral acids, and stimulants, as aromatic tinctures, or ether, may be added besides. Or they may again be made vehicles for the chloride of soda, when circumstances appear to demand its use.

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* ℞ Plumbi Acetat. gr. j.
Pulv. Opii, gr. ¼.
Extract. Anthemid. gr. iij.
Fiat pilula sextâ quâque horâ sumend.

Vel,

℞ Plumbi Acetat. gr. j. ad gr. iij.
Acidi Acetici. ♏x.
Aquæ distillat. ℥jss.
Tincturæ Opii, ♏v.
Misce. Fiat haustus sextâ quâque horá bibendus.

* Take Acetate of Lead, one grain.
Powdered Opium, a quarter of a grain.
Extract of Camomile, three grains.
Make a pill, to be taken every six hours.

Or,

Take Acetate of Lead, one to three grains.
Acetic Acid, ten minims.
Distilled Water, an ounce and a half.
Laudanum, five minims.
Make a draught, to be taken every six hours.

† ℞ Olei Terebinthinæ, ♏xx.
Mistur. Acaciæ, ʒij.
Aquæ Puræ, ʒx.
Tincturæ Zingib. ♏xxx.
Misce. Fiat haustus sextâ quâque horà dandus.

† Take Oil of Turpentine, twenty minims.
Mixture of Acacia, two drachms.
Water, ten drachms.
Tincture of Ginger, thirty drops.
Make a draught, to be given every six hours.

‡ ℞ Liquor. Ammoniæ, ℥ss.
Olei Olivæ, ℥j.
Olei Terebinthinæ, ℥ss.
Olei Limonis, ʒss.
Agita simul donec misceantur. — *Dr. Copland.*

‡ Take Liquor of Ammonia, half an ounce.
Olive Oil, one ounce.
Oil of Turpentine, half an ounce.
Oil of Lemons, half a drachm.
Shake together till they are mixed. — *Dr. Copland.*

In the first stage of typhus gravior, when there is any excitement, wine would be improper; but after some days' continuance, and when there is no cerebral or other visceral congestion, a moderate use of it will be advisable. At the commencement of typhus gravior, where only one or two organs are involved in the typhoid state (as, for instance, when the tongue is furred, or the evacuations from the bowels are very dark, while at the same time the body continues of a healthy colour, and the other secretions are of a natural appearance), it would be injurious to prescribe wine in considerable doses; but in the more advanced stages, when the whole body is verging towards the putrid state; when the skin is of a dark colour, and covered with petechiæ; when the mouth and fauces are parched, and the tongue and gums encrusted with a dark fur, we may resort to this remedy with greater freedom. It may then be mixed in panado, gruel, or whatever else of the like kind the patient takes for food, or it may be given to him properly diluted with water to drink.

For the healing of ulcers in the mouth, we may employ a solution of alum in water (an ounce of the former to a pint of the latter), as a gargle, which will quickly take away the stench that arises from them; or we may substitute that which has been recommended in typhus mitior.

In the advanced stage of typhus gravior, it is of the utmost consequence to procure rest; and therefore, where there is no tendency to coma, we may give an opiate towards bedtime; or it may be more salutary and safer to allay irritability and obtain slumber by small doses of laudanum, as from three to five drops added to each dose of the medicine which the patient may be taking. We believe that, as shown by Dr. Latham, some caution is requisite in the exhibition of this drug, lest a sleep be brought on from which there is no waking. Hence we conceive that it would be a good rule to adopt, on first prescribing it in any case, that the quantity exhibited within the twenty-four hours, when it is given in divided doses, should not exceed twenty drops of the tincture, or one grain of solid opium; while fifteen drops of tincture, or three-fourths of a grain of opium, should be the limit, if it be given as a single dose once only in the same period of time.

A slight purging, attended with a gentle moisture on the skin, not unfrequently arises towards the close of this fever, and now and then assists in carrying it off; but where it does not seem to produce a critical effect, it ought to be stopped as quickly as possible by astringents.*

When we succeed in removing the symptoms entirely by the means which have been pointed out, or in procuring a cessation of the fever, we are to endeavour to prevent its return by a free use of cinchona bark, or the sulphate of quinine (see INTERMITTENTS), infusions of gentian, quassia, calumba, cascarilla, cortex cuspariæ, conjoined wiah orange-peel, and other stomachic tonics; and in order to recruit the strength, the patient should be directed to use a nourishing diet, with wine in moderation; and he should take such gentle exercise as his state of convalescence will admit.

Having pointed out the mode of treatment to be adopted when the disease actually takes place, it seems proper likewise to mention the precautions it may be necessary to pursue, in order to prevent its contagion from being communicated to others.

When the disease arises, the sick ought to be removed to a clean and well-aired room in the most remote part of the house, and as much separated from the rest of the family as possible; his bed-linen should be changed frequently; his body be kept clean; whatever comes from him by stool or urine be immediately removed and emptied, and his chamber be well ventilated by allowing a free admission of air into it. In summer the patient should be covered only with a sheet, and in winter with a single blanket above the sheet. None but the necessary attendants should have any communication with the sick; and these, to guard against contagion, should avoid sitting down on the patient's bed; and they must likewise carefully avoid inhaling the vapour arising immediately from his body. When near him they may keep a sponge or handkerchief, moistened in camphorated spirit or vinegar, to the nose and mouth.

In every species of typhus, direct and immediate exhalations from the sick, provided there is sufficient approximation, are indisputably adequate, in some cases, to infect others, even when the most minute attention shall have been paid to cleanliness and ventilation.

In hospitals, camps, and on board of ships, where a number are unavoidably crowded together, so as to render it impossible to cut off the communication between the healthy and the diseased, the simple means before recited will not prove sufficiently powerful for destroying the contagion, and therefore others must be adopted. In all such instances, besides well fumigating the apartments, clothes, beds, bedding, and hammocks of the sick, as hereafter advised, changing them frequently for fresh ones, paying the strictest attention to cleanliness in every respect, well ventilating every place where they are lodged by a constant and free admission of fresh air, — we should oblige those in health, as well as those tainted by the contagion, to undergo daily ablution with cold water.

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* ℞ Confect. Aromat. ʒss.

Aq. Cinnam. f.
—— Pimentæ, āā f. ℥jss.
—— Fontan. f. ℥ij.
Tinct. Kino, f. ʒij.
Ft. mistura, cujus sumat cochl. ij. ampla 4tis horis.

* Take Aromatic Confection, half a drachm.
Cinnamon and Pimento Water, of each, one ounce and a half.
Pure Water, two ounces.
Tincture of Kino, two drachms.
Of this mixture take two large spoonfuls every four hours.

Of late the chloride of lime, as also that of soda, have been much employed for purifying foul air, and preventing the extension of diseases of a contagious nature. They are both used in the form of a solution.

A solution of chloride of zinc has also been introduced and patented by Sir W. Burnett, and largely employed in that department of the public service of which he is the chief medical officer. We gather from a copy of Reports with which he has favoured us*, that not only has it been found universally effectual in deodorising foul ships when admixed with the bilge-water, or with other sources of fetid exhalations, but that it has appeared also to prevent the spreading of many infectious diseases, as of malignant scarlatina†, of severe fever‡, of phlegmonous erysipelas§, of malignant typhus.‖ To prevent the communication of infectious diseases, the solution is to be diluted with fifty times its bulk of water, and the whole floor of the apartment is to be sprinkled with this mixture, while flannels or cloths kept moistened by it are to be suspended in the room; foul linen is to be immersed in it, and a portion is to be placed in bed-pans before use, and poured from time to time down privies.

We have culled only a very small portion of the testimonies which might be adduced in favour of this agent; but perhaps enough has been done to show how great its discoverer conceives to have been the boon to humanity placed at his disposal. As patentee, he has fixed upon King William Street as the place of sale.

Dr. Pereira, at p. 371. of the first volume of the 5th edition of his incomparable work on "Materia Medica," makes the following observations in reference to chlorine, and the manner of employing it: "As a fumigating agent, disinfectant, and antiseptic, chlorine, I believe, stands unrivalled. Hallé, in 1785, appears to have been the first person who employed it as a disinfectant; but we are greatly indebted to Guyton Morveau for the zeal and energy he manifested in his attempts to introduce it into use. For destroying miasmata, noxious effluvia, and putrid odours, it is the most powerful agent known, and is therefore well adapted for disinfecting prisons, ships, hospitals, dissecting-rooms, and all other places the air of which requires fumigation. The best method of fumigating a large building is that adopted by Dr. Faraday, at the General Penitentiary at Milbank. One part of common salt was intimately mixed with one part of the black oxide of manganese, then placed in a shallow earthen pan, and two parts of oil of vitriol, previously diluted with two parts by measure of water, poured over it, and the whole stirred with a stick. Chlorine continued to be liberated from this mixture for four days. The quantities of the ingredients consumed were 700 lbs. of common salt, 700 lbs. of oxide of manganese, and 1400 lbs. of sulphuric acid."

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* Reports on the Solution of Zinc with respect to its Use in Contagious Diseases, &c. London, 1849.

† See Letter from Dr. R. Beith, pp. 8, 9.

‡ See Return of J. Allan, Esq., p. 11.

§ See Letter of J. Risk, Esq., p. 15.

‖ See Letter of Dr. J. W. Johnston, p. 16.

On the appearance of typhus or any infectious disorder in a gaol, or hospital, workhouse, garrison, transport-ship, or any other place where many persons are crowded together, we should not fail to advise one of these gaseous fumigations in every room, in addition to a free ventilation and the greatest cleanliness. The same steps should be adopted in academies, boarding-schools, and even our dwelling-houses.

We must remark, however, that as there is a prejudice very common to the human mind which causes us to assign noxious or poisonous properties to matters possessed of offensive or disgusting odours, so there is a tendency to attribute a disinfecting or preservative influence to such agents as are found to destroy these odours. The disinfecting powers of chlorine, and of its compounds, require farther confirmation — indeed, are denied by the late Dr. R. Williams, who does not hesitate to adduce trials made by Dr. Roupel, in the Seamen's Hospital Ship, and by Dr. Cowper, in Glasgow, during epidemic fevers of 1821, 1822, and 1827, as disproving its possession of such a power. Cleanliness, separation, and ventilation are, according to this author, the only trustworthy means of safety for the attendants; and these means are now universally recommended, even where the chlorides are simultaneously employed.*

SYNOCHA, OR INFLAMMATORY FEVER.

SYNOCHA is a fever attended with much increased heat; a frequent, strong, and hard pulse; the urine red; the animal functions but little disturbed, although at an advanced stage the sensorium is apt to become much affected. We may readily distinguish synocha from either typhus mitior or typhus gravior, by its being attended with symptoms like those of inflammation. It makes its attack at all seasons of the year, but is most prevalent in the spring; and it seizes persons of all ages and habits, but more particularly those in the vigour of life, with strong elastic fibres, and of a plethoric constitution. It is a species of fever observed at times in cold and temperate climates, but met with especially in tropical ones, among

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* Morbid Poisons, i. 97, 98.

Europeans lately arrived; and then, although the inflammatory stage is of short duration, it is very severe, and followed by proportionate exhaustion.

It comes on with a sense of lassitude and inactivity, succeeded by vertigo, rigors, and pains over the whole body, but more particularly in the head and back; which symptoms are shortly followed by redness of the face, throbbing of the temples, great restlessness, intense heat, and unquenchable thirst, oppression of breathing, and nausea. The skin is dry and parched; the eyes appear inflamed, and are incapable of bearing the light; the tongue is of a scarlet colour at the sides, and furred with white in the centre; the urine is highly coloured, and scanty; the body is costive; and there is a quickness, with a fulness and hardness, in the pulse, not much affected by any pressure made on the artery. The pulsations are from 90 to 130 in a minute; and when blood is drawn, it exhibits on cooling a yellowish or buffy crust on its surface, which is the coagulable lymph or fibrin. If the febrile symptoms run very high, and proper means are not used at an early period, stupor and delirium come on at a more advanced stage, the imagination becomes much disturbed and hurried, and the patient raves violently.

The disease usually goes through its course in about fourteen days, and often terminates critically, either by a diaphoresis, diarrhœa, hæmorrhage from the nose, or the deposit of a copious sediment in the urine; which crisis is usually preceded by some variation in the pulse. In many instances it, however, terminates fatally.

Our judgment, as to the termination of the disease, must be formed from the violence of the attack, and the nature of the symptoms. If the fever runs high, or continues many days, with great action of the heart and arteries, flushed turgid face, red eyes, intolerance of light, with vertigo, or early stupor and delirium, the event may be doubtful; but if to these are added, picking at the bed-clothes, startings of the tendons, involuntary discharges by stool and urine, and hiccups, it will then terminate fatally. On the contrary, if the febrile heat abates, and the other symptoms moderate, and there is a tendency to a crisis, which is marked by a universal and natural perspiration on the body; by the urine depositing a lateritious sediment, and by the pulse becoming more slow or soft; or by a hæmorrhage from the nose; diarrhœa supervening; or the formation of abscesses; we may then expect a recovery. In a few cases this fever has been succeeded by mania.

On opening those who die of an inflammatory fever, an effusion is often perceived within the cranium; and now and then topical affections of some of the viscera are to be observed.

We believe that there is great truth in the remark of Dr. Tweedie, when he says that in his experience of the epidemic fever of this country, synocha, if it do really occur, has been rarely observed. A few sporadic or scattered cases, which have many of the essential characters detailed, certainly present themselves in the spring months, but these form a small average proportion of the ordinary fevers of Britain.*

The cases of this disease which have occurred in the practice of the present editor have not been numerous, but they have yielded readily to mild antiphlogistic treatment without exhibiting any severe or dangerous symptoms, if we except those in which the event proved that there was inflammation of the central portions of the brain. Instances of this latter kind have suggested to our mind the suspicion which Dr. Watson entertains, that "genuine encephalitis, which is of course attended with pyrexia, is sometimes mistaken for continued fever with intercurrent inflammation of the brain."†

The exciting causes are, sudden transitions from heat to cold, the application of cold to the body when warm, swallowing cold liquors when much heated by exercise, too free a use of vinous or spirituous liquors, great intemperance, violent passions of the mind, exposure to the rays of the sun, the suppression of habitual evacuations, the drying up of old ulcers, and the sudden repulsion of eruptions. It may be doubted if this fever ever originates from personal infection; but it is possible for it to appear pretty generally among such as are of a robust habit, owing to a peculiar state of the atmosphere.

From the symptoms which attend this disease, it is evident our endeavours should be early exerted to avoid the mischief that may ensue from general inflammation; and as evacuation by bleeding is the chief mean we can confide in, it should be resorted to on the first of its attack; and one large bleeding at this period will have a much better effect than repeated small ones afterwards. If the symptoms run high, therefore, and the person is young and plethoric, from sixteen to twenty ounces or more may be drawn off at once from the arm through a large orifice. In repeating the operation, we are to be governed by the effect it produces on the pulse, and by the appearance the blood puts on after standing some time. If the former continues full, strong, and tense, and the latter exhibits a buffy, sizy coat on its surface, and there is acute pain in the head, the bleeding should be repeated, by all means, but in smaller quantity than before. Bloodletting relaxes the vascular system, diminishes its action, and takes off plethora.

It may be difficult to determine whether drawing blood from the temporal artery ought not to be preferred in severe attacks of synocha to venesection at the arm. Both, indeed, will relieve the headache, giddiness, and stupor; but I conceive that a more permanent benefit will be derived from the former.

When the fever has been of several days' standing, and the head is much affected either with severe pain or delirium, topical bleeding, by the application of three or four leeches to each temple, may be preferable to any other mode of drawing blood.

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* Cyclopædia of Practical Med., ii. 168.

† Lectures, 1848, ii. 737.

Applying linen cloths, wetted in cold water, together with æther or vinegar, to the forehead and temples, or over the shaven scalp, may be attended with some advantage in such cases.

It is in the ardent or seasoning fever of hot climates, more especially of the West Indies, that there is a demand for prompt recourse to, and a free employment of, general bloodletting. In the less severe examples of inflammatory fever occurring in this country, provided there be no active inflammation superadded, bloodletting may often be dispensed with altogether; or leeches, or venesection to a moderate extent, may be resorted to, according to the amount of febrile excitement present, and the feeble or robust constitution of the patient.

In cases where nausea prevails, it is not uncommon to commence the treatment by giving an emetic; but we confess ourselves not partial to this expedient, considering that the vomitings thus induced produce unnecessary distress; and that besides, where there is liability to affection of the head, they may aggravate that tendency. We prefer, therefore, giving three or four grains of calomel mixed with a little sugar, so as to form a powder, which may be placed on the tongue and washed down with a wineglassful of any simple drink. The patient and his stomach should then be left at rest for a couple of hours, when the following aperient draught should be administered.* After the bowels have been freely relieved, and the action of the purgative has nearly or quite subsided, mild diaphoretics should be given in the form of a draught, exhibited every four or six hours according to the urgency of the symptoms. The common form given below will be found as good or better than most others.†

To abate thirst, the patient should be directed to drink fre-

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* ℞ Infus. Sennæ Compos. f. ℥jss.	* Take Compound Infusion of Senna, one ounce and a half.
Magnes. Sulphat. ʒiij.	Sulphate of Magnesia, three drachms.
Mannæ Optim. ʒij. M.	Manna, two drachms.
Ft. haustus aperiens.	Mix them for an aperient draught.
† ℞ Liquor. Ammon. Acetat. ʒiij.	† Take Solution of Acetate of Ammonia, three drachms.
Mistur. Camphor. ℥j.	Camphor Mixture, one ounce.
Vini Antimon. Potassio-Tart, ♏xv. ad ♏xxx.	Wine of Tartarized Antimony, fifteen to thirty drops.
Misce. Fiat haustus sextâ vel quartâ quâque horâ vel etiam sæpius sumendus.	Make a draught, to be taken every six or four hours, or oftener.
Vel,	Or,
℞ Potassæ Nitrat. ℈j.	Take Nitrate of Potass, a scruple.
Ammoniæ Hydrochlorat. gr. xij.	Hydrochlorate of Ammonia, twelve grains.
Misce. Fiat pulvis ter quaterve in dies ex aquæ ℥iij. sumendus.	Make a powder, to be taken in three ounces of water, three or four times a day.

quently of diluting liquors, acidulated with lemon-juice or potassæ supertartras, or he may be allowed to drink freely of cold water. For the purpose of moderating or abstracting the morbid excess of heat, various parts of the body should be sponged frequently with cold water. Cool air may be freely admitted also, as it has been found that a person in fever may be kept much cooler than one in health, without uneasiness or harm. The acid fruits, such as oranges, &c., will be very proper.

Should the breathing be oppressed, or should stupor or delirium arise at a time or under circumstances that make cupping or the application of leeches inadmissible, it will then be right to apply a blister in the neighbourhood of the part affected. But it is at the decline of the febrile excitement only that blisters are likely to prove beneficial. While there is much heat about the scalp, or congestion of the vessels of the head and face, we consider leeches the preferable remedy. If the pulse sinks and the extremities become cold, the application of sinapisms to the soles of the feet will be proper. Camphor, æther, ammonia, and cordials will be demanded on such occasions. In this fever, as in most others, sleep is much interrupted; there may be simply watchfulness or more or less delirium. In the early part of the disease opiates and narcotics are inadmissible; and cold to the head, and the maintenance of quiet in the patient's room, are the most fitting means of procuring slumber; in addition to which the soothing effect of darkness should be tried. In a more advanced stage the hydrochlorate of morphia in pill, or a few drops of Battley's sedative liquor of opium, may often be beneficially given.* A gentle action of the bowels should be kept up by means of an occasional laxative if they are sluggish, and for this purpose three drachms or half an ounce of Epsom salts given in mint-water, with eight or ten drops of dilute sulphur acid, will answer very well. The addition of the acid makes the draught more grateful to the stomach, yet it will be better omitted if the skin be hot and dry. When the febrile excitement is manifestly declining, and the patient may be considered in the first stage of convalescence, the mineral acids are often advantageously given intermediately between the exhibition of the antimonial diaphoretics at first required, and the more powerful tonics that are

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* ℞ Morphiæ Hydrochlorat. gr. ¼.	* Take Hydrochlorate of Morphia, a quarter of a grain.
Pil. Hydrargyri.	Blue Pill,
Extracti Lupuli, ā gr. ij.	Extract of Hop, of each two grains.
Syrup. q. s.	Syrup, enough.
Fiat pil. horâ sommi sumenda.	Make a pill, to be taken at night.
Vel,	*Or,*
℞ Liquor. Opii Sedativ. Battleii, ♏xij.	Take Battley's sedative Solution of Opium, twelve minims.
Aquæ Cinnamomi, ℥jss.	Cinnamon Water, an ounce and a half.
Fiat haustus horâ somni sumendus.	Make a draught, to be taken at bed-time.

employed at a later period. The compound infusion of roses is an elegant form, and this may be combined with enough Epsom salts to guard against costiveness, and a little aromatic tincture to give it warmth, as in the prescription set down below.*

Throughout the whole course of the disease, the patient is to abstain from solid food and animal broths, supporting nature with gruel, and preparations of barley, sago, tapioca, &c.

His chamber is by no means to be kept warm, either by fires or by being closely shut up, as is too generally the case; on the contrary, it should be of a proper temperature, by allowing the admission of cool air into it from time to time. His bed ought to be lightly covered with clothes.

On his recovery, he should pay strict attention to regimen, scrupulously avoiding to overload the stomach, and partaking only of such things as are light, nutritive, and easy of digestion; all other causes likely to produce a relapse are also to be carefully shunned.

Fresh air, gentle exercise on horseback or in a carriage, agreeable company, and a moderate use of wine, will greatly contribute to the recovery of convalescents. Should the appetite not readily return, or the digestion prove weak, stomachic bitters†, conjoined with the sulphate of quinine or cinchona bark with some mineral acid, may be advised.—See DYSPEPSIA and INTERMITTENTS.

OF THE YELLOW FEVER, OR TYPHUS ICTERODES.

THIS disease takes its name (improperly, however,) from one particular symptom; but which, although pretty general, is by no means universal, nor even essential to its existence. By Sauvages it has been denominated typhus icterodes; by Cullen, typhus cum flavedine cutis; by the French, la maladie de Siam, and fièvre des matelots; and by the Spaniards, vomito prieto.

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* ℞ Infusi Rosæ Comp. ʒxj.	* Take Compound Infusion of Roses, eleven drachms.
Magnes. Sulphat. ℈j. ad ʒss.	Epsom Salts, one scruple to half a drachm.
Tinctur. Cardam. Comp. ʒj.	Compound Tincture of Cardamoms, one drachm.
Fiat haustus ter die bibendus. Adde pro re natâ Quinæ Disulphat. gr. j. vel. gr. ij.	Make a draught, to be drunk thrice a day. Add one or two grains of Sulphate of Quinine, as occasion requires.
† ℞ Infus. Gentian. C. f. ℥v.	† Take Compound Infusion of Gentian, five ounces.
Tinct. Cort. Cinchonæ, f. ℥ss.	Tincture of Bark, half an ounce.
—— Cascarillæ, f. ʒiij. M.	———— Cascarilla, three drachms.
Capiat cochl. ij. ter in die. Adde, pro re natâ, Acid. Sulph. Dilut. ♏x. ad xv.	Mix them, and give two tablespoonfuls thrice a day, adding occasionally from ten to fifteen drops of the Diluted Sulphuric Acid.

Of late years this fever has prevailed throughout the several colonies in the West Indies, and along the shores of North America, particularly at New York and Philadelphia; from which places it extended in a short period to the southern parts of Spain, and has nearly equalled the plague in its devastation.

Yellow fever, according to Dr. Shapter, in his article on this subject in the "Library of Medicine," may be said to be proper to places situate between 40° north and 20° south latitude; and appears to require a temperature in which the mean summer range is not less than 75°, or according to some authors 80° Fahr.; a lowering of the heat to 50° causes the decline and disappearance of the most violent epidemics of it.

With respect to the origin of the yellow fever in America, there has prevailed a great difference of opinion; some supposing it to have been introduced from the West Indies; and others, that it took its rise from the exposure of putrid animal and vegetable substances on the public wharfs of the city of Philadelphia; which opinion is strongly supported by Dr. Rush, as he found that the streets adjoining to these wharfs were the first in which the disease made its appearance, and that in several instances it could be clearly traced from thence to other parts of the city. Let this be as it may, it is evident, from the report of Dr. Chisholme, and others who have written on the disease, that the fever which prevailed in Philadelphia was exactly the same with that which raged in the West India colonies.

Dr. Clarke informs us, that there appears to have been such an extensive and very peculiar deranged state of the atmosphere in the towns of the West Indies and in North America, that it is more probable the disease was produced by this general cause, breaking out nearly at the same time in these different places, than that it was carried from the one to the other, either by persons or in any kind of goods or merchandize.

We are informed by Dr. Miller, of New York, that the yellow fever in America always begins in the lowest part of a populous mercantile town near the water, and continues there without much affecting the higher parts. It rages most where large quantities of new ground have been made by banking out the rivers, for the purpose of constructing wharfs. The appearance and prevalence of the yellow fever in low situations have led to the belief, he tells us, that the disease was imported by ships from the West Indies. But a person seized with this fever in an affected part of the town, and conveyed to one that is healthy, or carried into the country, does not communicate it, he asserts, to the neighbourhood, nor to those immediately around him. He therefore is of opinion, that the yellow fever is generated by the impure air or vapour which issues from the new-made earth or ground raised on the muddy and filthy bottom of rivers, and which vitiates the air above it, in like manner as air becomes offensive and injurious when it approaches or passes over a body of vegetable or animal matter in a state of putrefaction.

On the other hand, we are informed by Dr. Hosack, the learned Professor of the Institutes and Practice of Medicine in the university, New York, as well as by Dr. Francis, and other physicians of eminence in America, that the yellow fever did not originate there from domestic causes, but was exclusively of foreign origin*, and contagious in a confined deteriorated atmosphere and unventilated situations. Dr. Hosack, indeed, in a still later publication†, has brought forward strong arguments, and I think satisfactory evidence, that the fever in question arose from imported contagion, and neither was of domestic origin, nor the product of decomposed animal and vegetable matter.

Dr. Bancroft ‡ is of opinion, that the only existing cause of yellow fever is the application of marsh miasma to the human body, and that the disease is really a marsh remittent fever. He thinks himself justified, from repeated observations, in concluding that the joint influence of marsh miasma, and of an atmosphere unusually and sufficiently heated, upon persons habituated to a cold or temperate climate, is, of itself, fully capable of causing an epidemic yellow fever, resembling that which has committed such ravages in the West Indies, the United States of America, and the South of Europe. We are told by him that the common bilious remittent of hot climates, which is universally admitted to be the effect of miasma, differs from the yellow fever only by being less violent; that at the utmost their symptoms only vary in degree, and consequently the danger is greater in the latter than the former, for the yellow colour appears usually in both.

During a residence of nine years in the West Indies, from 1776 to 1785, I had frequent opportunities of meeting with the yellow fever among seamen, and such new comers as were imprudent on their first arrival; and although the disease never prevailed during that period epidemically, still I looked upon it as capable, under certain circumstances, of being communicated from one person to another. We ought to be aware that a fever, not contagious at its commencement, may acquire that character from confined air, filth, and accumulation; then why deny that the same may take place during the prevalence of typhus icterodes?

By diffusion of its virus in the open air, the disease may rarely be communicated from one person to another in country situations, where there is a constant circulation of fresh air; but in confined and unventilated situations, where cleanliness is neglected, I am decidedly of opinion that it may as readily be propagated as typhus gravior, the gaol or hospital fever. About ten days is, I believe, the longest period recorded of yellow fever appearing after an exposure to contagion.

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* See American Medical and Philosophical Register.

† See his Discourse on the Medical Police of the City of New York.

‡ See his Essay on the Disease called Yellow Fever.

We have here, however, two propositions brought together, which in our view cannot be kept too distinctly apart; the one that a disease essentially contagious, may only manifest that property when external circumstances have caused its virus to exist in a state of considerable concentration; the other, that a disease essentially non-contagious, can acquire a new power under the influence of extraneous agencies. From the truth of the first of these propositions, supported as it is by the analogies of all poisons whose actions may be moderated or annihilated in proportion as dilution diminishes the quantity of them brought into actual operation, few will be found to dissent. The other proposition, or the doctrine of contingent contagion, appears to us unsupported by any analogy, and to require a weight of evidence for its establishment, such as has not yet been supplied. Thus it must be shown not only that the original disease was non-contagious, but that that which was subsequently proved to be contagious was identical with it, and could not have arisen from a fresh and infectious source.

The case of the Eclair steam-vessel, which arrived at Boâ Vista, one of the Cape de Verd Islands, from the west coast of Africa, on the 21st of August, 1845, with fever on board, seems to afford very valid arguments in favour of the contagiousness of yellow fever, while by some it has been adduced in support of the doctrine of contingent contagion. This fever appeared and raged in the island shortly after the arrival of the Eclair. Dr. McWilliam, the able investigator of the circumstances of this case, speaks as follows at p. 104. of the report presented to the House of Commons. "Judging from the result of general experience as well as from the medical reports, it seems to me to admit of no doubt that the disease which invaded the Eclair in the latter end of May, and early part of June, 1845, was the usual endemic fever of the African coast, which, although a most fatal disease, is not to be considered of an infectious or contagious nature." "At Sierra Leone, the irksome and unwholesome duty of cleaning the hold of the Albert, as well as that of their own vessel; the unwonted exposure in some cases by day and night; the irregularities committed by men who had for some months been exposed to morbific influences, — all combined to the development of a fever of a much more malignant nature than the usual endemic of the African rivers. Accordingly, several of the cases that occurred after the ship left Sierra Leone were marked by unequivocal black vomit." "It is thus quite evident that the type of the fever changed materially for the worse during the passage from Sierra Leone to the Gambia and Boâ Vista. There is also great reason to believe that it acquired still greater virulence while the crew were at the fort" (in a small islet lying off Boâ Vista). "The house in which the sick were lodged there contains only one room at all well ventilated, and, judging from the evidence of Dr. Almeida, they must have been much crowded; at all events, the fact is beyond doubt, that the accession to the sick list and the mortality became much greater at this than they had been at any previous period. In short, from the endemic remittent of the African coast, the disease had, from a series of causes, been exalted to a concentrated remittent, or yellow fever." Farther on, at p. 106., we read as follows: — "If, then, the absence of all local cause on the small island, and the identity of the diseases that proved fatal to them and to the sailors be admitted, the inevitable conclusion is, that the fever was propagated to the soldiers" (who were on guard at the fort, and communicated freely with the sick there,) "either directly by contagion from the bodies of the sailors, or by an infectious matter left in the room occupied by the sick crew. The same reasoning applies to the island of Boâ Vista, to which it seems beyond any doubt that the fever was conveyed by the negro soldiers, and by them transmitted to Anna Gallinha and their other visitors at Pao de Varella."

In reference to the farther spreading of the fever, the conclusion is thus stated at p. 107.: — "In fact, it may be said, that in each town and village on the island the disease first appeared in a single house, which became an irradiating focus for its dispersion in all quarters. The exemption," it is added, "of persons who removed in time from infected places, was clearly shown in many instances." "And farther, Boaventura was for some weeks without a case of fever, although the disease was raging at Cabeçada, a few hundred yards only from it, by the adoption of measures to prevent intercourse." Other instances of complete immunity from seclusion are on record in the evidence appended to the report. There was no malignant fever any where on the African coast, or among the islands.

We have here adduced powerful arguments in support of the contagious character of this disease; that it was the yellow fever is admitted on all hands. It is only fair to add, that Sir W. Burnett, in his letter to the Secretary of the Admiralty, prefixed to the Report, says, that he "cannot conscientiously arrive at the conclusion the doctor has done, viz., 'that the fever was occasioned by the intercourse with the Eclair.'" Sir William Pym, on the other hand, in his letter to the Lords of the Council, printed for, and presented to the House of Commons, says that he "considers that the variety of uncontrovertible evidence brought forward by Dr. McWilliam relative to the disease in question (the Eclair fever), has finally decided and set at rest a most important and long-contested question relative to the nature and history of yellow fever, more especially as to its infectious power." Sir W. Pym, however, differs from Dr. McWilliam in this, that he says nothing of the conversion of the African remittent into yellow fever, but speaks of the Eclair as having lost ten seamen on the coast of Africa, from the 3rd of April to the 8th of June, by the former disease; as having her crew healthy from that date to the 23rd of July; but as having sailed from Sierra Leone (where she had remained eighteen days), with one case of fever on board, which was marked by black vomit, was fatal in four days, and was soon followed by other similar cases, that is to say, of yellow fever. If there be no error in this statement, though these diseases arose in succession on board the same vessel, there is no evidence of the conversion of the one into the other.

The doctrine of contingent contagion has found an advocate in the writer of an article in the "British and Foreign Medico-Chirurgical Review," for Oct. 1849, who adduces the cases of the Eclair steamer, and of three other vessels, in support of it, and maintains the identity of the bilious remittent and contagious yellow fevers. The learned Dr. Copland, on the contrary, writing upon the hæmagastric pestilence, in the third volume of his Dictionary, strives to establish directly opposite conclusions. We can only indicate these sources of information for those who may wish to study the arguments recently adduced on the opposite sides. Who shall decide when doctors disagree?

Several of the distinguished writers on yellow fever have asserted that the constitution is invulnerable to the operation of its contagion a second time. Sir W. Pym has strongly advocated this position, and has supported it, in the letter addressed to the Lords of Council, already referred to, by the re-publication of the Report of the Board of Physicians (dated Gibraltar, 31st of March, 1829), which had been convened in that town for the purpose of investigating the question of liability or non-liability to a second attack of this disease. At p. 15. of Sir W. Pym's letter, there are two passages of the report which are all that our space will allow us to extract. "Of the 164 soldiers," as stated by Dr. Broadfoot, "141 were attacked at various periods of their attendance upon the sick" (during the then recent epidemic); "whilst of the 61 civilians employed in the same service, the two only who had not had the fever before, caught the disease."

"From these facts, then, it is evident that one attack of the bulam or yellow fever, preserves the individual from a second; invariably, the Board would have added, did not even the very small number of cases of second attack brought before them seem to show that there may be some rare exceptions to this rule in this disease, as there certainly are with regard to small-pox itself."

Dr. Chervin and Mr. Fraser were the only two out of thirteen French, English, and Spanish medical practitioners, who dissented from the conclusions of this Report. Dr. Gillkrest, at p. 280. of "Cyclopædia of Practical Medicine," vol. ii., declares that one well-marked attack gives great security against subsequent ones, but protests against this being thought a new discovery, since Lining and others had maintained as much for some fifty years. Dr. Copland powerfully maintains the same opinion.

The persons most liable to be attacked by this fever in the West India Islands, were the Europeans who had lately arrived; and hence it was, that the troops sent out to recruit our armies, and the seamen to strengthen our fleet, fell its earliest victims. Women were observed to be less liable to its attacks than men, and children still less so than these: and the people of colour were by no means so apt to be seized with it as the whites. When the disease did appear among them, it was always much milder, owing most likely to their necessary temperance. Persons of a full plethoric habit, and that were intemperate in their mode of living, were much greater sufferers by it than those of a lax fibre, and who were guilty of no irregularity. Young people born in the West Indies, and educated in Great Britain, and persons having resided some years in England, after they had passed a great part of their lives between the tropics, were observed to be very liable to an attack of this fever on their return to the West Indies.

Not only does the yellow fever attack Europeans newly arrived in the West Indies in preference to creoles, negroes, and those who by a long-continued residence have become acclimated, but even among those Europeans who happen to be susceptible, the most healthy and robust, and in general those who are earliest subjected to great exertions, and a high degree of temperature, are soonest seized, and more rapidly destroyed, than those of laxer fibres, or those who have had an opportunity of becoming more gradually inured to the climate.

In North America it also happens, that the inhabitants who constantly reside in the most southern States are seldom attacked with this fever in its violent form, while those of the north-east States are destroyed by it in great numbers; but even in these districts it has been remarked, that it more readily seizes strangers from Europe, or peasants from the interior provinces, than the natives of the towns in which the disease prevails.

The strongest men, those of the most dense and rigid fibre, are particularly subject, both in America and the West Indies, to the high degree of yellow fever; and are most frequently and rapidly destroyed by it. Women, children, convalescents from a former malady, and those who have been reduced by the use of mercurial remedies, are less frequently the objects of its attack; and when it happens to seize them, it is usually milder, and less rapid in its progress. In these classes, the state of the animal fibre, either from original conformation, or from eventual circumstances, more nearly approaches to that of the creoles and natives. The dark races, however, appear not to be exempt.

There is so much reason to believe that, sometimes at least, other diseases have been confounded with yellow fever, and that it has thus obtained a character and attributes not properly its own, that we cannot abstain from quoting from Dr. Copland's very able and learned work, at p. 951. of the first volume, a paragraph in which he has endeavoured to remedy these errors, and to point out the distinctive peculiarities of what he considers to be alone the true yellow fever. "*The true, or pestilential yellow fever*, is different from severe remittents, and from ardent fever, *neither of which is infectious, while yellow fever is eminently infectious.* — *α. Ardent fever* occurs only in Europeans recently arrived in hot climates, and never in the acclimated, nor in aboriginal or native inhabitants: it cannot attack the dark-skinned races, and the assimilated European. — *β.* The severe forms of remittent affect both those who have arrived in miasmatous districts, after they have been exposed to endemic causes, and those who have resided longer and become seasoned or acclimated, especially when the causes have been concentrated or intense. They may also attack individuals from adjoining districts, especially from elevated situations, when they descend to the low grounds and swamps near the sea, or the embankments of rivers, but they rarely affect the aboriginal inhabitant, and the negro races. — *γ. The true yellow fever,* on the other hand, attacks the unseasoned, the seasoned, the constant resident, and the dark-skinned races, the negro as well as the European,—all within the sphere of its infection *who have not previously had the disease.* A former attack protects from true yellow fever, but remittents will occur again and again in the same person; and even ardent fever will occur a second time, if the person who has once been affected by it has returned to Europe, resided long in it, and afterwards gone to a warm country. The remittent is endemic in warm climates, and in several temperate countries in warm seasons, especially those abounding with the sources of malaria; the ardent fever occurs only among persons who have recently arrived from cold or temperate climates in a very hot country; the true yellow fever appears only occasionally, and then the infection may extend to a few only, the circumstances favouring its diffusion not existing, or to great numbers, the disease thereby becoming epidemic. Thus the first and second of these fevers are always occurring, especially the first; the third seldom, or after long intervals."

The yellow fever usually attacks with lassitude and weariness, chilly fits, listlessness, faintness, giddiness, flushing of the face, redness of the eyes, pains in the eye-balls and lower part of the forehead, as likewise in the back, debility and sighing, thirst, and a tendency to coma; the urine is high-coloured, small in quantity, and turbid; the perspiration is irregular, interrupted, and greatly diminished; the saliva is viscid; the tongue is covered over with a dark fur; the bile is secreted in unusual quantities, and thrown into the stomach, from which it is again speedily ejected; and the skin is hot, dry, and hard.

The disease continuing to advance, the eyes become of a deep yellow; the face and breast are, in many cases, tinged with the same hue; an incessant retching and vomiting ensues, yet without nausea; great costiveness prevails, and a peculiar delirium arises, which is attended with a permanent dilatation of the pupils of the eyes. The evacuations of the bowels, however, are healthy when obtained.

There is hardly ever an evident remission until the fever has entirely gone through its first stage, which is generally in thirty-six or forty-eight hours, when there is often such an abatement of the symptoms as to induce the patient to think himself tolerably well; but their speedy recurrence in an aggravated form, accompanied with extreme debility, soon convinces him of the contrary.

In the last stage of the disease the greatest debility prevails, and symptoms of universal putrefaction arise; large patches of livid spots are to be observed on different parts; the tongue becomes dry and black, the teeth are incrusted with a dark fur, the breath is highly offensive, the whole body exhibits a livid yellow in many cases, but not in all; hæmorrhages break forth from the mouth, ears, and nostrils; dark and fetid stools are discharged, hiccups ensue, the pulse sinks, and death follows very quickly.

These are the usual appearances to be met with; but great irregularities have been observed by different practitioners. Dr. Chisholme mentions, that he often found patients, without any previous complaint, suddenly become giddy, lose their sight, fall down almost insensible, and remain in that state for half an hour and upwards; the body then became overspread with a cold sweat, and this was succeeded by intense heat, a quick, small, hard pulse, violent pain in the head, particularly in the forehead, great anxiety about the præcordia; the eyes were much inflamed, watery, protruded, and wildly rolling; the face was much flushed; there was great heat at the pit of the stomach, with nausea, frequent retching and vomiting, as also severe pains in the small of the back and calves of the legs.

During 12, 18, 24, or 36 hours, he found all these symptoms continue to increase, except the quickness and hardness of the pulse, which were not materially changed; and that they were then succeeded by general coldness, clammy sweats, and a greater or less degree of coma or delirium. Life, in this case, was lengthened out to sixty or ninety hours from the attack. A short interval of reason perhaps took place, the patient considered himself better, and flattered himself for the moment with the hope of recovery; but a fit, as sudden and as unexpected as the first, came on, during which he rolled his eyes dreadfully, foamed at the mouth, and threw out and pulled back his extremities in violent and quick alternate succession. Dr. Chisholme observed, that in general the patient expired in this fit; but in a few instances he recovered from it, and continued rational for a short time, when another ensued and carried him off.

He noticed that in a few instances the patient complained of violent pains in the testicles, and, on examination, he perceived them much lessened in size and retracted, with an excoriation of the scrotum; now and then he found a remarkable change in the voice, and that it became weak and shrill; in a few instances he could discover little or no yellowness of the skin.

Dr. Rush says the disease appeared with different symptoms in different people: he observed the premonitory signs of it were, costiveness, a dull pain in the right side, defect of appetite, flatulency, perverted taste, heat in the stomach, giddiness or pain in the head, a dull, watery, brilliant yellow, or red eye, dim and imperfect vision, a hoarseness, or slight sore throat, low spirits, a disposition to sweat at night, or after moderate exercise, or a sudden suppression of night-sweats. More or less of these symptoms frequently continued for two or three days before the patients were confined, and in some they continued during the whole time of the prevalence of the fever in the city of Philadelphia, without producing the disease. Many went to bed in good health, and awoke in the night with a chilly fit; many rose in the morning after natural and regular sleep, and were seized at their work, or after a walk, with a sudden and unexpected attack.

He observes, that it frequently came on with a weak pulse, and often without any preternatural frequency or quickness; in some cases the pulse intermitted, and these intermissions occurred in several persons who were infected, but who were not confined by fever; in others, there was a more than ordinary slowness of the pulse, which was now and then accompanied with a dilated pupil of the eye. Hæmorrhages happened at the commencement of the disorder, chiefly at the nose and uterus: and as it advanced, the discharge of blood became more universal, and then issued from the gums, ears, stomach, bowels, and urinary passage.

Many complained of a dull pain in the region of the liver, but few felt any soreness to the touch, or pain at the pit of the stomach; in some, a determination of blood took place to the lungs, but the brain was chiefly affected with morbid congestion, which was indicated by the suffusion of the face, redness of the eyes, dilatation of the pupils, pain in the head, hæmorrhages from the nose and ears, by sickness or vomiting, and by an almost universal costive state of the bowels.

With respect to the secretions and excretions, there appeared to be a preternatural flow of bile, which was discharged from the stomach and bowels in large quantities, and of very different qualities and colours, being in some cases yellow, and in others black. The urine was sometimes plentiful and of a high colour; sometimes it was pale, and at others it was small in quantity and turbid: moreover, sweats of a yellow colour, and highly offensive to the smell, often broke out. On the first and second day the tongue was invariably moist and white; but as the disease advanced, it became red, and put on a smooth shining appearance: towards the close, a dry black streak appeared in its middle, which gradually extended to every part of it.

The effects produced on the nervous system were different, according as the fever affected the brain, the muscles, the nerves, or the mind. In a few instances apoplexy was induced, which usually proved fatal; tremours of the limbs, and twitching of the tendons, were common; delirium was a frequent symptom, but many passed through the disease without the least derangement of ideas: in some cases, the pain in the head was acute and distressing; and the stomach, towards the close, was affected with burning or spasmodic pain of the most severe nature.

The senses and appetites exhibited several marks of the ravages of this fever upon the body. Deafness and dimness of sight sometimes took place. Thirst and want of appetite were present, as in most other fevers. The convalescence was marked by a sudden renewal of the propensity to venery. Swellings in the inguinal and parotid glands took place in a few instances, which did not proceed to suppuration. In some cases, the skin was preternaturally warm; in others, it was cooler than in health. The yellow colour was by no means universal: when it took place, it was seldom to be observed before the third day, but more frequently about the fifth or seventh from the first attack. The eyes seldom escaped a yellow tinge. There were eruptions of various kinds on the skin, and in the latter stage petechiæ were common; carbuncles also took place in a few cases.

The disease ended in death in various ways. In some it was sudden; in others it came on gradually. The last hours of some were marked with great pain and strong convulsions: but in many death seemed to insinuate itself into the system with all the gentleness of natural sleep.

In every case that came under Dr. Rush's care there were evident remissions or intermissions of the fever, or of such symptoms as were substituted for it. The disease continued for fifteen, twenty, or thirty days in some people. He observed, that all were affected by it; but persons in the prime of life were most liable to it.

Critical days were hardly ever distinguishable in this fever, nor was the crisis often very evident. Sometimes a copious perspiration put an end to it; and at others, the return of sleep, a hæmorrhage from the nose, or sudden diarrhœa, carried it off.

Dr. Bancroft is of opinion*, that the black matter thrown up in this fever is merely blood which has been effused from some of the small arteries, darkened by the gastric juice, or by some chemical decomposition, either spontaneous, or produced by the action of the air or other matter contained in the stomach.

Dr. Jackson† thinks that the black colour of the matters ejected from the stomach, or discharged by the anus, in the latter stages of this form of fever in the West Indies, owes its origin to an admixture with diseased secretions from the mucous membranes of the whole gastric system, more particularly of the liver.

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* See his Dissertation on the Yellow Fever.

† See his Sketch of the History of Febrile Diseases, as they appear in the West Indies among the Soldiers of the British Army.

Concerning the nature of the black vomit, various opinions have indeed been entertained. Some have considered it as consisting of putrid bile; some, as composed of a mixture of blood and bile; some, of the villous coat of the stomach dissolved in the progress of inflammation, terminating in sphacelus; and others, of bile mixed with the septic acid contained in the alimentary canal. Dr. Cathrall, of Philadelphia*, considers all these opinions as erroneous, and offers it as his, that the black vomit is an altered secretion from the liver. We are informed by him, that the black vomit, or matter so called, appears to be of two kinds; one consisting of a number of flaky particles, resembling coffee-grounds; the other of a dark-coloured, inspissated mucus. From various and repeated experiments, he concludes that the black vomit, besides a considerable proportion of water tinctured with resinous and mucilaginous substances, contains a predominant acid, which is neither the carbonic, phosphoric, or sulphuric; but hints it may be the muriatic.

The late Dr. John Davy, in his account of this fever as it prevailed at St. Anne's, Barbadoes, in 1847, says, "that the fluid vomited strongly reddened litmus paper, and carbonated alkali mixed with it effervesced, and the blackish matter suspended in it, seen under the microscope, exhibited an appearance very like that observable in the blood-corpuscles in a very dilute acid, and was found, like them, to yield, on incineration, a notable proportion of peroxide of iron." †

The yellow fever differs from typhus gravior in the following circumstances, viz.: it usually prevails only during, or immediately after, very hot seasons, in which typhus is soon extinguished; and it is in its turn completely annihilated upon the accession of cold weather, in which typhus is commonly most prevalent, particularly if accompanied with humidity of the atmosphere. It attacks most readily and violently the young and robust, over whom typhus is allowed to have the least power.

It differs from the plague, in that it prevails only in those countries, and in those seasons, in which the heat is, or has recently been, so great as to destroy or stop the progress of the plague: in the intertropical climates, therefore, so favourable to the existence of the yellow fever, the plague is unknown. The glandular and cutaneous affections called buboes and carbuncles, so constantly accompanying the plague, are seldom met with in the yellow fever.

In forming an opinion as to the event of the yellow fever, we must keep in view the nature of the symptoms, the mode of attack, and the age and habit of the patient. Youth and a plethoric state are invariably circumstances of danger. A sudden oppression of all the functions at once; great debility; weak, irregular pulse; sighing; severe vomiting of dark matter; tremours of the body when moved, with a tendency to faint on the slightest exertion; pensive sadness in the countenance; and a dilatation of the pupils of the eyes, with coma, — are signs of great danger. Very few recover from that stage in which a black vomiting is the prominent symptom. Black and fetid discharges by urine and stool, the breath being highly offensive, and the appearance of petechiæ, portend almost certain death. Suppression of urine is also a symptom of evil import.

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* See the New York Repository for 1800, for his Memoir on the Analysis of the Black Vomit, ejected in the last stage of this fever.

† Edinburgh Med. and Surg. Journal, lxxii. 280.

The symptoms that we may regard as favourable are, a settled state of the stomach, lessened headache, eyes lively, appearance of an eruption on the skin (known in tropical climates by the name of prickly heat), free perspiration, copious and high-coloured urine, bilious flux, and sound sleep. No disease, however, exhibits a greater variety of symptoms than this; for sometimes it goes on with favourable appearances, then suddenly changes to the worst; and sometimes patients apparently almost in a state of convalescence, expire in a few hours.

Dissections of the bodies of those who have died of the yellow fever have shown the coats of the œsophagus corroded; the stomach and intestines loaded with a black matter, or both to be often inflated, somewhat inflamed, and congested; the liver, in many cases, to be shrunk to less than half its natural size, very hard, and of a colour approaching to buff; and the gall-bladder to be flaccid and greyish, having but little bile contained in it. In some instances the lungs have been found infiltrated with blood; and the bladder has been observed to be much thickened, and to be covered with yellow mucus. The integuments of the brain have been observed more or less inflamed, the vessels of the dura and pia mater to be very turgid with blood, and occasionally there has been extravasation. Sometimes the volume of the brain has been found increased, and the substance of it more firm than usual: in some protracted cases it is softened. The spleen is usually increased in size, and softened. The kidneys are for the most part of a yellow colour; internally they are congested, and on minute examination very small abscesses may be discovered in their papillæ. The ureters very generally contain pus. The vessels of the neck of the bladder are at times surcharged with blood. Sometimes the gall-bladder is distended with a mass like tar, or molasses; sometimes it contains a small quantity of orange-coloured serum or pus; its coats are usually very vascular.

The same difference of opinion which arose among the professional gentlemen of America with regard to the origin of the disease, seems likewise to have subsisted between them as to the mode of treatment to be pursued; some recommending and adopting the antiphlogistic plan, by bleeding, purging, and a low diet; some, the stimulant plan, with a liberal use of the bark, wine, opium, and the cold affusion; and others, again, either purged moderately with calomel, or bled on the first or second day of the fever, and then resorted to a free use of bark, wine, laudanum, and aromatic tonics,

— and this practice they adopted on the supposition that the disease was inflammatory in its first stage, and putrid in its last.

According to the report of Dr. Rush, this last mode of treatment was scarcely more successful than the tonic and stimulant one; and that which he found to succeed best was the antiphlogistic, pursued even to a degree of extreme rigour; for we are given to understand, that although in some instances he allows of one or two moderate bleedings being sufficient, still, in most cases, he was in the habit of repeating the operation much oftener, and of drawing off a considerable quantity each time, even from the poor who resorted to his house for advice.

Whether or not bleeding may be practised with advantage to the patient in America, or to what length it may be carried, I am not capable of determining, never having been on that continent; but being well acquainted with the climate of the West Indies, from a long residence there, and having often met with the disease, (although not under its very malignant form,) I must concur with the objectors, who contend that, in tropical climates, venesection resorted to among the natives, and such others whose bodies and constitutions have been perfectly assimilated to the climate by a long residence, cannot in general produce a good effect,— the reduction of tone, which a certain period of residence occasions in the constitutions of Europeans, as well as of the natives, renders it unnecessary; but when this fever has attacked new-comers of a vigorous constitution and in rude health, but more particularly soldiers and seamen, (who bear phlebotomy better than any class of people in private life,) then I am ready to admit, that the abstraction of blood soon after the seizure, or during the early stage, may be beneficial, if the quantity drawn off is in due proportion to the age, habit, and other circumstances of the patient. When the fever is completely formed, or is of a longer standing than 36 or 48 hours, it will bid defiance to depletion by the lancet, which then, instead of proving serviceable to the patient, may be highly injurious.

Dr. Bancroft is of opinion that bleeding may be resorted to in certain cases of the yellow fever, not only with safety but advantage, and he quotes himself as an example; but he says, that the propriety of the operation, and the quantity of blood to be taken away, must be determined by the circumstances of the patient.

On a more intimate acquaintance with this species of fever than physicians possessed at first, many of those who have had most experience in attending patients labouring under the disease, now approve of venesection at the onset, or soon after the seizure.

To obviate the inflammatory diathesis which prevails during the first stage of the disease, and to take off the determination from the head, as well as to cleanse the primæ viæ of acrid and offending humours, we may employ gentle purging, so as to procure one or two evacuations daily during the continuance of the fever; but as the stomach is seldom in such a state as to be capable of retaining those purgatives which are in common use, and a triple dose is generally necessary, it has been found best to administer calomel, either by itself, or combined with jalap or extract. colocynth. comp. as below.* If the first dose does not operate in due time, it is to be repeated. At the end of four hours or so, if the purgative has not yet been attended with the desired effect, it ought to be assisted by an enema, while at the same time about half an ounce of magnesiæ sulphas, dissolved in a little mint-water, should be given the mouth.

In no stage of typhus icterodes can emetics be administered with safety, owing to the disposition to vomit which usually prevails, and which it is often difficult to allay. Instead of prescribing emetics, we are to endeavour, by every possible means, to calm and allay the irritation of the stomach. This principal object should be kept in view, as it is the excessive irritability of the stomach which leads to the black vomiting.

Mercury being known as a specific in local inflammations, and there being besides a great disorder of the liver in yellow fever, practitioners have been induced to employ it to the extent of exciting salivation; and where an incessant vomiting has prevented their using the chloride of mercury in sufficient doses to effect this, they have substituted mercurial frictions. In some of the cases where calomel was administered with this view, the quantity was necessarily increased to an almost incredible extent. Dr. Chisholme mentions a case where 400 grains were given before the salivary glands were affected; and in the "Medical Commentaries" for the year 1795, Dr. Duncan, of Edinburgh, notices an instance where, within the space of a few days, the patient had taken 270 grains of it, and had rubbed in twenty drachms of the strongest mercurial ointment, with the happiest effects.

Mercury may, probably, be a proper and valuable remedy in typhus icterodes. To ensure its success, it should, however, be employed at the very commencement of the disease, and be so used as to affect the mouth before the dangerous symptoms of the second stage of the fever make their appearance. Dr. Currie, of Philadelphia, informs us†, that in every case in which he has seen mercury employed after the distressing and dangerous symptoms of the second stage had come on, it aggravated them and increased the danger; and that when resorted to after signs of what is called

† See vol. ix. p. 102. of the Med. and Phys. Journal.

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* ℞ Hydrargyr. Chloridi, gr. iv.	* Take Calomel, four grains.
Pulv. Jalap. gr. viij.—xvj.	Powder of Jalap, from eight to sixteen grains.
Syrup. Zingib. q. s. M. Ft. Electuarium pro dose.	Syrup of Ginger, enough to form an electuary for a dose.
Vel,	*Or,*
℞ Hydrargyr. Chloridi, gr. vj.	Take Calomel, six grains.
Extract. Chlocynth, C. gr. x. M.	Compound Extract of Colocynth, ten grains.
Fiant Pilula iij.	Mix them together, and form the mass into three pills.

putrescency have made their appearance, it has invariably accelerated the fatal event, notwithstanding the declaration of Dr. Chisholme to the contrary.

In having recourse to mercury externally, we may direct half a drachm, or even a drachm of the strongest ointment to be rubbed into the thighs, hams, legs, and arms, every four hours; and we may give calomel internally, either by itself, or combined with opium *, according to the state of the bowels. When a gentle ptyalism takes place, its use ought immediately to be omitted, and only nourishment and wine be given.

That many patients have recovered by a mercurial treatment, when early adopted, appears from Dr. Chisholme's excellent work, as well as from the practice of the naval and military hospitals in the different West India islands, and the reports of various private practitioners. In typhus icterodes, possibly, there may be congestions in the liver, both from an accumulated and imperfect secretion of bile; and mercury certainly possesses very stimulating and deobstruent qualities.

We are told by Dr. Bancroft, however, that mercury administered so as to produce a salivation, appeared to him to be extremely equivocal in its operation. He is of opinion that the good effects of the mercurial treatment have been greatly exaggerated; that many persons have died of this fever, although mercury administered externally or internally have produced a copious salivary discharge; and that in many others who have recovered, the discharge did not begin until after a solution or great mitigation of the fever. He, however, deems the use of mercury as a purgative highly beneficial, and to this quality he is strongly disposed to refer its reputed efficacy in all fevers.

At the commencement of typhus icterodes, it is not unusual for a frequent vomiting to prevail. In such cases it may be advisable to wash out the stomach with an infusion of the flores anthemidis.

Dr. Gillkrast, at p. 281. of the second volume of the "Cyclopædia of Practical Medicine," after noticing the common practice of giving calomel, either in the form of a small pill, or mixed in half a teaspoonful of thick gruel, for the purpose of quieting the stomach, goes on to say, that the proposed object may with more certainty be obtained by the use of croton oil, as recommended by Mr. Tegart in 1825, who found that a drop or two, placed on the tongue, not only excited the immediate action of the bowels without increasing the irritability of the stomach, but favoured the secretion from the kidneys also. Mr. Hacket, in 1832, bore farther testimony to the benefits produced by this medicine, in allaying

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* ℞ Hydrargyri Submuriat. gr. ij.—iv.	* Take Submuriate of Mercury, from two to four grains.
Opii, gr. ss.	Opium, half a grain.
Confect. Rosæ, q. s. M.	Confection of Roses, a sufficiency to form a pill, which is to be repeated every four hours.
Ft. pilula, 4tis horis repetenda.	

gastric irritation and general nervous excitement, as well as restoring the circulation to the surface, and often inducing a remission of all the symptoms. He used it freely, both by the mouth and in the form of enema; and it seems to us well deserving of a trial.

Warm clysters made of mucilaginous and aromatic vegetables infused in boiling water, with an addition of sixty drops of the tincture of opium, have been attended with the most immediate and sensible benefit in cases where vomiting, oppression about the præcordia, and great irritability, appeared to be owing to exhaustion from too copious depletion.

In cases of great irritability of the stomach, where excessive vomiting prevails, the application of a blister immediately over the part, or to the spine, may be attended with the best effect; but this remedy is in general applied too late, and a determination to that important organ is suffered to take place before any attempt is made to counteract it, which at last proves too powerful to be removed.

In some instances the vomiting has been known to cease upon the application of a large poultice of mustard-flour to the stomach and feet, which occasioned a very extensive and painful inflammation of the skin.

By employing cold affusion on the first onset of typhus icterodes, we may probably, in some instances, arrest its progress, and interrupt the morbid actions; and even in cases of some days' continuance, we shall be able, by means of it, to abstract heat, induce sleep, and recruit the animal powers. In an advanced stage, it will be best to substitute aspersion, or ablution with a wet sponge. In all cases where there may be the smallest danger of arresting the movements of life by either affusion or aspersion, a glass of wine, or some other more powerful cordial, should be taken immediately after using the remedy.

It is, however, only when the heat of the body is above the natural standard, that cold water should be applied externally; and the period of its application and the frequency of its repetition must be determined by the feelings of the patient; for should he become chilled by it, much mischief might ensue. To avoid any fatigue to the sick, which the usual mode of applying this remedy is apt to induce, a late writer * on this fever recommends as a useful substitute, that the patient should be covered as he lies in bed with a single sheet wetted with cold water, which by evaporation will gradually reduce the temperature of his body to a proper standard.

Dr. M'Lean has seen the best effects to arise from cold affusion in this fever, and tells us that, in order to heighten its power, he often premised the warm bath, and while the patient was sitting in it, he dashed two or three buckets of cold water suddenly on him.

Some communications of Dr. O'Leary, through the medium of

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* See Dr. Bancroft's Essay on the Yellow Fever.

the "London Medical Journal,"* further establish the good effects of the affusion of cold water in typhus icterodes. We are told by him, that he was ordered, soon after his arrival at Barbadoes from Europe, to attend the sick of the 70th regiment at Antigua, where, on his arrival, he found they amounted to about a hundred. They were chiefly affected with the yellow fever, and the mortality had been very great; but on his employing cold affusion judiciously, agreeably to the rules advised by Dr. Currie (see TYPHUS MITIOR and GRAVIOR), very few died afterwards. He mentions, that so sensible were the men of its being superior to any other remedy, and of the relief obtained from it, that in his absence they frequently entreated the officers, when duty led them to visit the hospital, to have it repeated on them.

In a short history of the yellow fever which prevailed at Norfolk in America, communicated by Drs. Selden and Whitehead to Dr. Miller of New York†, further testimony in favour of an early use of the cold affusion is adduced. They have reported, that of all those patients to whom they had an opportunity of exhibiting this remedy on or before the second day of the attack, they had the good fortune not to lose one; but after this period, when the fever had begun to subside without symptoms of amendment, the affusion of cold water seemed to hasten the fatal catastrophe. In no instance did they employ the remedy in question without the exhibition of calomel at the same time. No disagreeable effect was produced by combining the use of calomel with the affusion of cold water; nor did the mercury occasion a salivation in a single instance, although the discharge from the bowels was scarcely as great as when it was used alone in the cure of the disease.

In temperate and cold climates, where we employ affusion, it will be sufficient to take the water fresh from the spring, pump, or the sea; but in warm climates, in order to command the full and expected effect, it will be necessary that its temperature be reduced to a low degree (as about 40 of Fahrenheit's thermometer), by exposing it to the night air previously, or by adding some salt to it.

Much benefit will probably be derived from cold water taken internally as drink, small quantities of which, frequently repeated, have been observed to moderate the excessive heat of the body, as well as the violence of general febrile action and thirst; it is likewise efficacious in disposing the skin to perspire gently, and in preventing inflammation and irritation of the stomach.

Should proper means not have been adopted sufficiently early, or should they have failed in procuring the desired effect, and symptoms of putrefaction have made their appearance, our endeavours must be directed towards stopping the putrid disposition of the fluids by the most powerful antiseptics. West India practitioners have of late administered the capsicum, in the form of pills, as a stimulant, and with very good effect. Spirituous baths have likewise been employed. The cinchona bark or quinine must be given in such moderate doses as the stomach will bear; and if it will not retain any quantity, either in substance, decoction, or infusion, it may then be given in the form of clyster. A pint of decoction, made by boiling an ounce of the powder in a quart of water, until one half is evaporated, may be injected every three or four hours. Acid fruits may likewise be given liberally; and the ordinary drink should be wine, sufficiently diluted with water, and acidulated with lemon or orange juice, or one of the mineral acids.

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* See vol. xvi. p. 490.

† See Med. and Phys. Journal, vol. x. p. 266.

Dr. Wood, in his "Practice of Physic,"* under the head of treatment of this disease, makes the preliminary observations, that there are many cases of yellow fever in which no treatment can be of any avail, and others so mild that they get well under any kind of management, unless positively destructive. Hence the difficulty of estimating the value of any particular system or remedy; while it remains probable, nevertheless, that in many cases of intermediate severity, the result may depend altogether upon the medical treatment. Bleeding, says this writer, will not cure the disease, nor should it be vaguely employed with this view. It should be resorted to only when the pulse is tense and strong; when this is very frequent or readily compressible, the lancet should never be employed. Not more blood should be taken than may be necessary to reduce the force of the pulse; and this seldom exceeds fifteen, twenty, or at most thirty ounces in a vigorous adult. Less than the smallest quantity mentioned will be often sufficient. In the great majority of cases it will not be necessary to bleed at all.

"It is generally found," says Dr. Copland, "that the usual mode of treating fevers occurring to persons who have recently migrated to places within the tropics, sanguineous depletion, — a mode generally found beneficial, and even necessary in young and robust Europeans, — is not only inefficacious, but often highly injurious even in those persons when attacked by this pestilence. It will, for the most part, be more beneficial, in cases of local congestion, or prominent affection of an important organ, especially where moderate bloodletting is indicated, to resort to local depletion by cupping below the shoulder blades, or leeches behind the ears or elsewhere, rather than to large bleedings from a vein."†

The two authors just cited are not equally in unison on the question of the efficacy of a mercurial plan of treatment. Dr. Wood, on the ground that they who undergo salivation recover, recommends a large purgative dose of calomel at the outset, probably as much as ten or twenty grains, and then often repeated smaller doses, in amount and frequency proportioned to the urgency of the case; and employs mercurial frictions, and mercurial dressings of blistered surfaces, in farther prosecution of his object. Dr. Copland has less confidence in the specific action of this mineral, and appears not to employ it externally. Yet he uses calomel freely in conjunction with stimulants and opium. Thus he says, that the quantities prescribed, and the intervals between the doses, have varied much with the character and nature of the attack, but that he has given from five to twenty grains of calomel, with three to fifteen of camphor, two to five of capsicum, and from one third to one grain of pure opium every four or six hours; and in some instances, where it was not necessary to give the former of these substances so frequently, he has given a larger dose of opium. Of purgatives, this author says, that they are required in all the forms of this disease, and more especially early in the attack; but he suggests only such forms as have been spoken of above, remarking, however, that the addition of one or two drops of creasote to each dose makes them less apt to offend the stomach. After the free action of these, the frequent recourse to sweet oil in the earlier stages, and to this oil with spirits of turpentine in the last stage, aided by enemata, will generally, he adds, procure a sufficient evacuation of the bowels, more especially if calomel be given, with camphor, capsicum, and opium, as already mentioned.

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* Vol. i. p. 309.

† Dictionary, iii. 184.

Of blisters, bleeding, opium, effervescing medicines, &c., Dr. Copland has proved the inefficacy in allaying the irritability of the stomach; but opium, combined with full doses of calomel and capsicum, he found beneficial, especially when aided by the application of turpentine epithems over the epigastrium and abdomen. In the last stage it is remarkable, he observes, that the vomitings are more completely allayed by spirits of turpentine taken on the surface of milk, or of some aromatic water, than by any sedative or narcotic. As in other fevers so in this, it is most necessary for the medical attendant not to mistake vascular excitement for constitutional power, and not to defer too long recourse to such stimulants as may best ward off, or enable the patient to pass through, that stage of depression which in all severe cases is to be anticipated. Hence, notwithstanding the heat of skin and rapid pulse, so soon as the culminating point is past and the pulse shows increasing feebleness, the use of tonics and stimulants should commence, and be pushed to such an extent as is demanded by the exigencies of the case. Of medicinal stimulants, camphor, ammonia, capsicum, especially when conjoined with opium and aromatics, or with the preparations of cinchona, are considered by this author most deserving of confidence, while oil of turpentine is most generally applicable, especially when conjoined with other oils, so as to act on the bowels, and administered in enemata. Champagne, hock, Madeira, brandy, one or other in varied states of dilution, and in various quantities, and farinaceous food, must be given perseveringly and sometimes unsparingly.

Throughout the whole course of the disease, the strictest attention ought to be paid to cleanliness, by not only changing the patient's linen frequently, and immediately removing and emptying whatever comes from him, but likewise by allowing a perfect and free ventilation of air through his chamber. To destroy contagion, and assist in correcting the fetor, the gaseous fumigations recommended under the head of Typhus Gravior ought to be employed.

The patient's strength is to be supported throughout the disease with preparations of barley, sago, tapioca, Indian arrow-root, &c.; and his thirst allayed by a liberal use of barley-water, common water, or any other grateful beverage or subacid drink. When the powers of life appear to be failing, stimulants, wine, and other cordials, might be resorted to.

Dr. M'Lean observes, that he always found opium to be injurious in the beginning of this fever, although restless nights and anxiety often tempted him to prescribe it in large doses. It procured no settled rest; for a time the delirium was increased, to which stupor rather than sleep succeeded; and the next day, languor, irritability, and weakness, prevailed. When remissions had commenced, and where a return was apprehended, he gave opium freely, and apparently with good effect. It was likewise useful when convulsions took place, and to procure sleep towards the decline of the disease.

When remissions are obtained, and the disease shows a disposition to yield, the cinchona bark, joined with sulphuric acid, may be taken with advantage; and its use should be continued during the whole stage of convalescence, which is often tedious and long, owing to the great debility that is always left behind, and from which the patient cannot readily recover, unless by a change of climate. Should this medicine occasion nausea, or any other unpleasant effect, the sulphate of quinine may be substituted, in the dose and forms mentioned under the head of Intermittent and Remittent Fevers.

Quassia in a cold infusion is a valuable medicine during convalescence, and here the cold bath may also be serviceable.

The cortex cuspariæ has likewise been found a useful medicine towards the close of this fever, when debility is the chief symptom. An infusion of it* sits easy on the stomach, and is attended with beneficial effects in restoring the strength and appetite. Other tonics may be used at the same time: for these, see DYSPEPSIA.

In recommending a use of the cortex cuspariæ, it appears necessary to guard practitioners against a spurious species of it met with in the trade, and which proves of a deleterious and poisonous quality. The genuine, according to Dr. Pereira, has a disagreeable odour, is fragile when dry, easily cut, light, with a tissue not very dense, and a dull and blackish fracture. The false angustura (or nux vomica) bark, has a very slight odour or none at all, is broken or cut with difficulty, is heavy, with a compact tissue and resinous fracture.

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* ℞ Infus. Cuspariæ, f. ℥v.

Tinct. Cinchon. f.
—— Calumb. f. āā ℥ss. M.

Capiat cochl. larga ij. ter quaterve in die, cum Acid. Sulph. Dilut. ♏x.

* Take Infusion of Angustura Bark, five ounces.
Tincture of Peruvian ditto,
—— of Calumba, each half an ounce. Mix them.
The dose may be two tablespoonfuls three or four times a day, adding about ten drops of Diluted Sulphuric Acid.

Where the disease breaks out in a garrison, the healthy should immediately be separated from the sick, and, if possible, be encamped at a considerable distance. Subjecting the former to cold ablution daily might possibly enable them to resist the powers of contagion the better. A cordon, furnished with guards, should be placed round the lazaret, or hospital, where the sick are lodged, to cut off any communication with the diseased and their attendants from those not affected. In the apartments of the sick, fumigation (as advised under the head of Typhus Gravior) should be adopted. An attention to these and other precautionary means may be productive of the most happy effects; a neglect of them, of ruinous calamity and devastation, as was unfortunately experienced at Gibraltar on the first appearance of the disease.

Having pointed out the most approved method of treating the yellow fever, it seems advisable to offer a few hints, by an attention to which Europeans may often be enabled to withstand its attack; or, if seized, to go through it with the least danger. The plethoric and robust, being the subjects most liable to this malignant disease, all such, on their approach to warm latitudes, ought to be bled in proportion to their strength; but should this have been neglected during the voyage, it may be done immediately on their arrival on shore.

After bleeding, if the patient is of a full and plethoric habit, the bowels are to be opened by some cooling purgative; and if he is naturally of a bilious habit, it may be advisable to premise a gentle emetic.

On his voyage being completed, and his landing, he must observe the greatest temperance in his diet, and carefully guard against any exposure to the sun in the middle of the day, and to the cool air of the night, until he becomes somewhat habituated to the climate. The effects of temperance, as a prophylactic, are strikingly demonstrated by Dr. Chisholme, who observes, that while the yellow fever raged at the island of Grenada, the utility of this was remarkably illustrated by the almost total exemption of the French inhabitants from the disease, whose mode of living, compared with that of the English, is temperate and regular in an uncommon degree.

Dr. Clarke tells us, that new settlers who could be prevailed upon to undergo a gentle course of mercury, taking a few laxative medicines, afterwards confining themselves to a moderate use of wine, and living chiefly on vegetables and fruits for the first two or three months, may rely almost to a certainty on escaping this fever. The remark is, I think, well founded, excepting that, notwithstanding all these precautions, it may arise from contagion;

and in this case its virulence, in all probability, will be greatly diminished. (For preventive medicines, see PLAGUE.)

Having pointed out the means for enabling Europeans to withstand an attack of this fever, I proceed to offer, from personal experience, a few admonitions or rules, by an assiduous attention to which they probably may be enabled to enjoy a long and uninterrupted state of good health in warm climates, unassailed by any disease whatever. Men who exchange their native for a distant climate, may be considered in a light somewhat analogous to that of plants removed into a foreign soil, where the utmost care and attention are required to inure them to their new situation, and keep them healthy.

Every European, in changing his own climate for a warm one, should, if possible, avoid arriving at his new situation during the rainy season of the year. This, with some small variation, commences in the West Indies about the month of August, and terminates in October. If he has it in his power to choose the place of his residence, he ought to prefer that situation which is somewhat elevated, dry, open to the air and sun, and remote from woods, stagnant waters, or marshy grounds. Most of the towns in the West India islands, as likewise the factories on the coast of Africa, with some of our settlements in the East Indies, are, for the convenience of trade, situated on low grounds, either contiguous to the sea, or on the banks of some large river. Swamps and marshes, therefore, exist in their neighbourhood; and when acted upon by a powerful sun, particularly after heavy rains, they send forth noxious vapours and exhalations (malaria), which prove a never-failing source of intermittent and remittent fevers, fluxes, &c. to all descriptions of inhabitants, but more particularly to Europeans lately arrived.

Persons of this description ought, therefore, to pass as little of their time as possible in such a situation; and where obliged by business to resort there by day, they should retire early in the evening to one that is elevated, and that has the advantages before described. If no such situation is to be procured without great inconvenience, sleeping on board a vessel in an open road or healthy harbour will then be preferable to passing the night on shore. Where unfavourable circumstances do not admit of either of these advantages, and new-comers are obliged to remain constantly in an unhealthy spot, they will act prudently in adopting such means as will tend in some measure to lessen the danger to which they are exposed. The highest apartment in the house should be chosen to sleep in; if furnished with a stove, a small fire should be kept in it; and the windows that front the swampy ground, if the house is to the leeward of this, are to be kept shut, admitting the light and air by the others. About half an ounce of the compound tincture of bark may be taken every morning on an empty stomach, and the same dose again in the evening. Smoking tobacco might also be serviceable in such a situation.

A propensity to smoking is, however, too general among Europeans and natives in tropical climates; yet it ought to be considered not only as a degrading but an injurious habit, as during the process the grog-glass is in constant circulation. In particular places, where marshy or other deleterious exhalations abound, or during very moist damp weather, at certain seasons of the year, smoking may be useful and allowable.

The diet of Europeans newly arrived in a warm climate should consist of a greater proportion of vegetable food than of animal, avoiding such articles of the latter as are either salted or very highly seasoned. To all such, a free use of ripe subacid fruits will be highly proper, as they will not only assuage thirst, but serve to correct any tendency in the fluids to putrefaction. In the West Indies it is usual, for the purpose of allaying thirst, to take weak punch in the forenoon daily; sherbet, or an infusion of preserved tamarinds, in water, will be found, however, a grateful and more salutary beverage for that purpose. The danger of drinking cold liquors of any kind when the body is much heated by exercise, and the perspiration profuse, cannot but be obvious to every person.

The unbounded hospitality of the islanders in the West Indies frequently proves a source of much evil and danger to new-comers; for they are no sooner arrived than they are engaged by invitation in a daily round of visiting and feasting, committing therein excesses, which, together with an unavoidable exposure to the dews of the evening in returning home, are not unfrequently productive of a severe attack of illness. To all new settlers I beg leave, therefore, to recommend a very moderate indulgence in the delicacies of the table; a spare and temperate use of all kinds of vinous and spirituous liquors, giving wine the preference to spirits; a proper self-command in sensual gratifications; the carefully avoiding any exposure to a current of air, or moisture, particularly when the body is heated by exercise; their refraining from this in the heat of the day, taking it early in the morning and cool of the evening; their return early to their respective homes, so as to avoid the night-dews; their refraining from dancing and such other active amusements; and their cautiously obviating a costive habit, by taking from time to time some gentle cooling laxative, until they are able to establish a proper regularity in this point, by visiting the temple of Cloacina at certain hours every day, and soliciting natural evacuations.

The custom of going early to bed, and rising betimes in the morning, is conducive to health every where, but more especially so in hot countries. If gentle exercise, either on foot or horseback, be added in the morning, it will prove highly salutary; and should cold bathing be first used, the body would thereby be much invigorated, and rendered less susceptible of external impressions. Where the convenience of a proper bath is not to be procured, water properly cooled, by having been exposed all night to the air in pots, or a tub, may be thrown over the body. Minor ablutions, at other periods in the day, may also have a good effect. Cold bathing is one of the most powerful means we possess for counteracting the injurious influence of a hot climate, and it connects the most grateful sensations with the most salutary effects; but it should be used in the mornings. The practice would, however, be injurious to those who labour under any visceral derangement; for such, a slight tepid bath may be substituted with advantage.

The dress of new-comers should consist of coats made of thin woollen cloth, with waistcoats and breeches of dimity or nankeen, and they should clothe in proportion to the exposure. What is worn next to the skin should be made of cotton in preference to linen, as this last, when moistened with perspiration in consequence of any severe exercise, is very apt to convey a sense of chilliness when the body becomes inactive again. Calico shirts will, therefore, be preferable to linen ones. Those who are afflicted with rheumatic pains may substitute a waistcoat of thin flannel next to the skin. New settlers should observe the greatest precaution in changing their clothes, of every kind, as soon as possible after getting wet; a circumstance too frequently made light of and neglected, and which often, therefore, proves the cause of an attack of some severe disease.

In a few words, the preservation of the health of Europeans in tropical climates will very much depend on avoiding the various predisposing and exciting causes of disease, until the physical sensibility of the system is reduced by habit to the climate.

Wherever the nature of military service unfortunately requires troops to be stationed near a marsh or jungle, as sometimes is the case in the West and East Indies, healthier spots should, if possible, be selected, and suitable buildings erected, for the reception of the sick, who should be removed there as soon as the precursory symptoms of disease appear. It sometimes happens, however, that in districts remarkable for insalubrity to a considerable extent, no healthy spot can be found; but probably even the most unhealthy may be converted into one of comparative salubrity, by the draining of low marshy grounds, and the destruction of jungle.

ORDER II.

OF EXANTHEMATA, OR ERUPTIVE FEVERS.

The diseases comprehended under this head, says Dr. Cullen, are in general such as do not arise but upon occasion of a specific contagion applied, which first produces fever (pyrexia), and afterwards an eruption upon the surface of the body, and which diseases, for the most part, affect persons but once in the course of their lives.*

To the small-pox, chicken-pox, measles, scarlet fever, and in some degree to the plague also, the properties of originating each in a specific contagion, which, as a general rule, can affect the same individual but once, and of being accompanied each by a characteristic eruption, observing ascertained laws, and running a more or less definite course, most conspicuously belong. It is, then, only to this most important and interesting group of diseases that we would be understood to refer, when speaking generally of the exanthemata; an order in which miliary fever, shingles, purpura, nettle-rash, &c., are here included, in deference to former custom, and through unwillingness to enter upon the task of a new classification, rather than from any assent to the propriety of their present allocation.

Dr. Alison has placed in a prominent point of view one ground of contrast between the contagious exanthemata and the phlegmasiæ, or inflammations, when he remarks, that in all of the former there is so distinct an eruptive fever (pyrexia), though of various duration, before the inflammatory appearances in the skin commence, as unequivocally to demonstrate that the inflammation, although an effect, and the only sure criterion of the poison which excites the fever, is not the cause of the fever; which must therefore be held, like idiopathic fever, to consist in the reaction of the system against the depressing influence of the specific poison.†

Some facts would lead us to conclude that diversities of climate, of seasons, or of temperature, may modify in a conspicuous manner the severity of these diseases. Thus Dr. Stabb, who has been long established in practice at St. John's, Newfoundland, has assured us that the eruptive fevers as occurring in that island, are of so mild a character as to lose all their terror; while Dr. Copland says of one of them, that in the hot and moist weather following the rainy season on the African coast, the variolous poison acquires an extraordinary power of development, and is extensively diffused, and fatal. Cullen asserted long ago that extremes of heat and cold were alike prejudicial in small-pox, as predisposing, the latter to inflammation, and the former to putrescence. We know not whether this statement was based upon theory or experience, and we turn to the trustworthy records of the Registrar-General, in order to obtain some insight into the influence of season throughout England and Wales upon the particular complaints which we are considering. The year being assumed to commence on the first of January, and divided into four quarters, each consisting of three successive months, we may, for the sake of brevity, distinguish these quarters numerically according to their order, as first, second, third, and fourth; and taking the five years 1838—1842 as the basis of our observations, we shall find the proportionate aggregate mortality in the several quarters of these five years very different in the case of the different diseases, small-pox, measles, and scarlet fever. Thus the numbers dying of small-pox in the third quarters of the five years form the smallest amount, those in the fourth are somewhat more, in the second still more; while the mortality of the first quarters considerably exceeds that of any of the rest. Thus the maximum number of deaths from this cause is, to the minimum first noticed, very nearly in the ratio of 1·44 to 1.

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* First Lines, 1784, ii. 123, 124.

† Outlines of Pathology and Practice, p. 471.

In measles, again, we have by far the smallest mortality in the months of July, August, and September; while, as regards the other three quarters, it is nearly the same for each, the mortality of either of these being, to the minimum just mentioned, as 1·3 to 1 very nearly.

In scarlet fever during the same five years, a wholly different law seems to obtain. Here it is in the second quarters, or during the months of April, May, and June, of these five years, that the mortality is least, while it is much greater in the first quarters, still greater in the third, and far greater yet in the fourth. Here the maximum mortality bears to the minimum a somewhat higher ratio than 1·62 to 1. These results, obtained on a somewhat wide field of observation, embracing large numbers, and extending over a period of five years, seem to show that season does not exert a common or like influence on the several individuals of the exanthemata, but that they are both very differently, and very unequally, affected by its variations.*

The epithet zymotic as applied to certain diseases, has obtained such currency, through its somewhat premature adoption in the publications of the Registrar-General, that we think it necessary to give some account of its import and origin, and the present seems the most appropriate place for our doing so. The adjective itself is derived from the Greek word ζυμη, signifying fermentation, and may be taken to imply that the diseases classed as zymotic, are in some sense connected with or the products of a fermentative process. It is necessary then to pass in review the conditions of fermentation as expounded by Liebig, and now generally admitted. Now these conditions may be stated to consist in the presence of three proximate principles in addition to that of water or moisture. Thus some ferment, as yeast, facilitates, if it be not necessary to the origination, of the fermentative action; and besides this there are required other two proximate principles, as gluten, or some

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* We give here, in a tabulated form, the number of those throughout England and Wales dying of small-pox, measles, and scarlet fever, during the five years 1838–42, under the several quarters in which they fell: —

	1st Quarters.	2d Quarters.	3rd Quarters.	4th Quarters.
Small-pox	13·139	11·827	9·120	10·448
Measles	11·199	11·278	8·674	11·217
Scarlet Fever	14·597	12·652	15·092	20·570

analogous body, and a saccharine principle also. In a liquid, then, containing gluten and sugar, to which yeast has been added, certain actions are readily set up, provided the temperature be suitable, which result in the growth or increase of the yeast at the expense of the gluten, while the saccharine matters undergo changes by which new proximate principles, as carbonic acid and alcohol, and subsequently acetic acid, are produced. Here we have the conditions and results of fermentation in the most complete or perfect form. It does not, however, appear that the presence of gluten is essential to the manifestation of some, perhaps of the most important, changes effected by the process; in its absence, the saccharine matters may pass through the same transformations as before, but the yeast originally added undergoes no increase. In any case where the process is uninterrupted up to its natural close, we have a resulting liquid, whether the products of the fermentative actions have been separated from it or not, incapable of the repetition of the same actions upon the renewed addition of fresh balm or ferment.

The character of the so-called zymotic diseases, under which head the eruptive and other continued fevers, hooping-cough, and perhaps some few other maladies are included, is, that they originate each in a specific morbid poison or principle given off from the persons of those who are labouring under the same disease; that in the course of the disease thus set up in these new subjects of the poison, that poison acquires an indefinite but very considerable increase of amount or intensity, while either the blood or solids of those who have passed through and survived the disease, have undergone such alteration as for the most part prevents a renewal of the same morbid actions or disease under a renewed exposure to the appropriate exciting cause.

At first sight it might seem natural that the actions of fire, the analogies of which with those under consideration, are recognised in the very terms fever and pyrexia, so universal with both the vulgar and the learned, would be appealed to for completing the parallelism between combustion, and these for the most part febrile diseases. It might indeed be urged, that the spark introduced from without, was adequate, under appropriate conditions, to kindle a flame, bearing no necessary relation in magnitude to the possibly insignificant source from which it had sprung, and capable of spreading far and wide the disease, or conflagration, of which it was the essence. It might have been argued also, that the fire, like the morbid poison, consumed the material of its own support and development, and left new combinations of matter incapable of sustaining the same actions a second time. We are not contending for the truth of this analogy, but we see in it scarcely greater difficulties than in the revived theory of fermentation, for which the celebrity of Liebig has procured an undeserved acceptance in the present day. According to this last, we are to believe that the yeast has its analogue in the morbid poison, the gluten and sugar in some unascertained principles existing in the blood; that the disease is a manifestation of the disturbance accompanying the reciprocal actions of these principles and the elimination of their products, while the blood is thus deprived of the ingredients essential to the future renewal of the same actions. There may be something very plausible in all this, yet it scarcely gives greater distinctness to our views with regard to the diseases in question, since nothing can be clearer than the simple statement of the facts that a morbid poison in developing a malady increases by some process of self-propagation, and at the same time exhausts or destroys the accessories, be they what they may, of its own operations and growth. We find here no explanation of what most needs to be explained, namely, that the blood, receiving after the disease continual renovation from sources, and by means of processes, similar to those upon which its composition was dependent before the occurrence of the disease, should rarely or never regain such a constitution as to fit it, under fresh exposure to the same poison or ferment, to set up the same disease anew.

We hesitate to assent to the assertion, that ancient doctrines founded on bold, unproven speculation, now again assume their places as scientific truths upon the secure basis of organic chemistry. What more, we ask, than a bold speculation, is a theory, with regard to which chemistry has as yet supplied no positive evidence, that the blood has lost, by the actions accompanying small-pox, or measles, or scarlet fever, or hooping-cough, those multifarious analogues of the gluten or the sugar which previously existed in it? What more than an unproven speculation is this theory when these principles remain as yet undetected, so that no analyst can point out, from an examination of the blood, whether an individual be exempt from, or is still liable to, contract any or all of these diseases?

It is no doubt true that our present certainty of the introduction into the blood of almost all poisonous and medicinal substances, both inorganic and organic, and our knowledge of its liability to contamination in consequence of the retention of many excrementitious matters, as established upon modern chemical evidence, has strengthened the grounds upon which the humoral pathology of former days had been based, and has given to it a higher degree of probability. But it is not true that chemistry has pointed out the peculiar changes effected in the blood by either of these classes of agents, so as to enable us to predicate of the majority of instances, if of any, in which the blood has received into its mass a morbid or other poison, that it has taken upon it actions analogous to those of fermentation.

Monidealism has ever been the curse of medical science. So limited have ever been the views of those who have at different times inculcated its doctrines, that of two rival theories, one has only existed by the total extinction of the other. It has not been sought to ascertain what unhealthy actions, what phenomena of disease may be explained by reference to a primary fault or error in the blood and fluids, what may originate in abnormal function of the more solid portions of the human frame, what cases may find their solution upon physical principles alone, and when and to what extent the operation of some unknown vital power, distinct from that inherent in mere matter, must be called in; but as in the present day, the operation of physical agencies upon living beings having gained assent, every thing is referred to them, and the presence of a principle of life is as nothing. So, too, upon the revival of humoral pathology, we are threatened with a despotism of humoralism, to the exclusion of every other principle. The impulse has been given; the Registrar-General, acting no doubt under medical advice, has promulgated as examples of zymotic diseases, a list of heterogeneous individuals, to be given presently, which appear brought together only under the assumption that all endemic, epidemic, and contagious diseases are blood diseases, and being blood diseases, that they are also zymotic diseases. Dr. Todd, too, upon no logical argument derived from chemistry, or any other source, makes epilepsy a blood disease, in deference, no doubt, to the prevailing fashion, which is still far from its culminating point. We neither wish, nor shall we attempt to refute any of these conclusions; what we regret is, their adoption upon what seems to us insufficient evidence, which leaves an opening for the same future vacillations in doctrine which have heretofore marred all sure progress. Others may find consolation in the dictum that truth is more likely to grow out of false theory than out of none; but we cannot but think that medical science must ere now have been much more advanced than it yet is, if the dogma were applicable to this branch of knowledge.

The zymotic diseases, then, are small-pox, chicken-pox, miliary fever, measles, scarlet fever, diphtherite, mumps, hooping-cough, croup, thrush, diarrhœa, dysentery, cholera, influenza, scurvy, purpura, ague, remittent fever, yellow fever, typhus, puerperal fever, plague, rheumatic fever, syphilis, erysipelas, glanders, hydrophobia, scald head, and itch.*

We pass from this digression to consider the several diseases ranged under the head of Exanthemata.

VARIOLA, OR SMALL-POX.

Small-pox is a disease of a very contagious nature, marked by pyrexia, attended with vomiting, and upon pressure of the epigastrium, with pain; succeeded after a few days by an eruption of red pimples on different parts of the body, which in the course of time suppurate, scab, and at length fall off, leaving frequently behind them little pits in the skin, and in severe cases scars.

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* Registrar-General's Seventh Report, pp. 262. 267.

The symptoms which precede the eruption of small-pox are three, viz. great cerebral disturbance, as manifested by intense headache, by great excitement, or actual delirium, by stupor, or by an epileptic seizure; great tenderness at the epigastrium, and severe pain in the loins. The other symptoms are common to the commencement of all febrile diseases, but these three co-existing in a greater or less, but still in a marked degree, warrant a confident prediction of the speedy appearance of the eruption of small-pox.

Pain in the loins, of one or two days' standing, provided there be no mechanical injury or other evident cause to account for it, should always awaken a suspicion of the possible existence of small-pox. We have on three occasions seen the eruption of this disease appear in patients admitted into hospital on account of lumbar pains, which were referred to some supposed accident.

With regard to the history* of the small-pox, it appears, from the researches of eminent writers, that this disease, as also the measles, had prevailed in China and Hindostan from remote antiquity, yet had not extended to the more western nations until the middle of the sixth century. About this period these maladies reached the southern coasts of Arabia, by vessels trading with India, and broke out near Mecca, during the war of the elephant (as it has been termed), in the year 569, immediately before the birth of Mahomet.

During the latter parts of the sixth, and whole of the seventh century, they were spread by the Arabians over the remaining countries of Asia, and all that part of Africa which is washed by the Mediterranean Sea. In the eighth century Europe was contaminated, in consequence of the Saracens invading Spain, Sicily, Italy, and France, and the above diseases gradually extended to the north. They had reached Saxony, Switzerland, and England, in the ninth or tenth century. And lastly, in the beginning of the sixteenth century, twelve years after the death of Columbus, the infections were transported by the Spaniards to Hispaniola, and soon afterwards to Mexico, and diffused speedily over that hemisphere also.

The small-pox attacks people of all ages, but the young of both sexes are more liable to it than those who are much advanced in life; and it may prevail at all the seasons of the year, but in general is most prevalent in the spring and summer.

It rarely happens that any person is attacked a second time with the disease, however he may be afterwards exposed to its infection, or even be repeatedly inoculated with variolous matter. A few instances to the contrary have now and then occurred, however, and with a high degree of severity.

The small-pox is distinguished into the distinct and confluent; implying, that in the former the vesicles are perfectly separate from each other, and that in the latter they run much into one another.

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* See Mr. Moore's History of the Small-pox, p. 110.

The distinct may often be distinguished from the confluent before the eruption appears, by the mildness of its attack, by the synochal type of the fever, the later appearance of the eruption, and the absence of typhoid symptoms.

Some anomalous varieties of small-pox occasionally occur in practice, viz. the crystalline, in which the fluid never becomes opaque or purulent; the vesicular, in which small vesicles appear in the interstices of the pustules; and some others; but which are all merely different modifications of the same disease.

Both the distinct and confluent small-pox are produced either by breathing air impregnated with the effluvia arising from the bodies of those who labour under the disease, or by the introduction of a small quantity of variolous matter into the habit by inoculation; and it is probable that the variety of the small-pox is not owing to any difference in the contagion, but depends on the state of the person to whom it is applied, or on certain circumstances accompanying the application of it.

Many physicians of eminence are of opinion, that the variolous contagion is limited to a narrow sphere, and that it seldom, if ever, is conveyed by the wind to a distance, as some have imagined it capable of being. Dr. Haygarth, in his "Sketch of a Plan to exterminate the casual Small-pox from Great Britain," informs us, that certain facts appear to exhibit *negative* proofs that the open air is not contaminated to a great distance from the patient; not to one thousand five hundred feet, nor probably to one hundredth part of the space. He mentions, that very few cases have been adduced by those who have corresponded with him on the subject, in which clothes exposed to variolous miasma have been even suspected of conveying infection, and that several have given a negative testimony against this mode of communication. He further notices, that innumerable instances are to be adduced where medical men, after exposing themselves to the miasma of an infectious chamber, in a very short time nearly approach persons liable to the distemper, who are yet not infected by the interview; and that inoculators are daily in this situation without communicating the casual small-pox. The period during which infection remains latent in the body before it shows its deleterious effects on the system, he observes, is determined by the testimony of many to be, in the inoculated small-pox, from the fifth day to the sixteenth, seventeenth, and even the twenty-third; in the casual or natural small-pox, a little but not much longer than the common period in inoculation. Dr. G. Gregory says that it averages twelve days, but varies from seven to fourteen.

A variety of opinions have been entertained respecting the effect of the variolous infection on the fœtus in utero; a sufficient number of instances, however, have been recorded, to prove that the disease may be communicated from the mother to the child. In some cases, the body of the child at its birth has been covered with pustules, and the nature of the disease has been most satisfactorily ascertained by inoculating with matter taken from these pustules. In other cases, there has been no appearance of the disease at the time of the birth, but an eruption and other symptoms of the malady have appeared so early, as to show that the infection must have been received previously to the removal of the child from the uterus. Moreover, some cases reported in the first volume of the "Medico-Chirurgical Transactions of London," by Dr. Jenner, establish the possible infection of the fœtus before birth, through the mother, she being already secure from any visible occurrence of the disorder, — a very extraordinary circumstance, but analogous to what happens with syphilis.

Four different states or stages are to be observed in the small-pox: — first, the febrile; second, the cruptive; third, the maturative; and fourth, that of declination or scabbing.

When the disease has arisen naturally, and is of the distinct kind, the eruption is commonly preceded by a redness in the eyes, soreness in the throat, pains in the head, back, and loins, weariness and faintness, alternate fits of chilliness and heat, thirst, nausea, inclination to vomit, and a quick pulse.

In some instances these symptoms prevail in a high degree, and in others they are very moderate and trifling. In young children, startings and convulsions are apt to take place a short time previous to the appearance of the eruption, always giving great alarm to those not conversant with the frequency of the occurrence.

As regards the duration of the initiatory fever, Dr. G. Gregory says that "it is singularly uniform: in a large proportion of cases the eruption shows itself at the end of forty-eight hours from the occurrence of rigor, pain of back, or sickness, whether the subsequent symptoms be mild or malignant, the eruption distinct or confluent. This period may be lengthened from weakness of habit, the loss of blood, long-continued vomiting, or extreme cold; but, so far as our experience goes, it is never shortened."*

The eruption is sometimes preceded by slight erythematous redness, scattered in spots over the body. It commonly first shows itself in the face; but not unfrequently, it appears in different parts of the body at once; sometimes it is first seen on the limbs, and, generally, it arises in different parts in succession.

First of all, red pimples, which are hard and acuminated, spring up in uncertain numbers, of which some disappear without change, and others become vesicles within four-and-twenty hours.

We abridge from Dr. G. Gregory's article, already quoted, the following sketch of the supposed structure of the variolous pock. The inflamed spot (phlyctidium) has its seat in the true skin. It commences on a central point called the stigma, spreads by radiation on the surface, and penetrates in different cases to a greater or less depth. The vesicle is found to be divided into numerous cavities; it is multilocular. Its floor presents the papillated structure of the skin, and at the height of suppuration this part is swollen and moist like a sponge. The fluids (lymph and pus) which at different stages distend the cells, are thrown out by vessels which shoot from the red central point or stigma. This point may readily be detected on the vesicles of the head and trunk (at least on most of them), by a depression on the surface of the vesicle, where the corion and cuticle adhere. It is this depression that gives the peculiar umbilicated form to the variolous vesicle, which is the great characteristic of small-pox.

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* Library of Medicine, i. 293.

The inflammation of the phlyctidium is accompanied by an areola of damask red colour, more or less vivid, according to circumstances, and extending to some distance beyond the margin of the vesicle. The secreted fluid, at first thin and limpid, elevates the sides of the vesicle above the surrounding skin; but at length the attachment of the stigma to the cuticle is destroyed, the central depression disappears, the pustule becomes rounded, and ultimately bursts, discharging purulent matter of the consistence of cream, and of a yellow colour. Throughout the whole period of maturation, but especially at its height, the surface of the body gives out a peculiar faint and sickly smell quite peculiar to this disease.

If the pustules are not very numerous, the febrile symptoms will generally go off on the appearance of the eruption, or they will become very moderate.

Should the pustules be perfectly distinct and separate from each other, the suppuration will probably be completed about the eighth or ninth day, and they will then be filled with a thick, yellow matter; but should they run much into each other, it will not be completed till some days later.

When the pustules are very thick and numerous on the face, it is apt about this time to become much swelled, and the eyelids to be closed up; previous to which, there usually arises a hoarseness and difficulty of swallowing, accompanied with a considerable discharge from the mouth of viscid saliva.

About the eleventh day the swelling of the face usually subsides, together with the affection of the fauces, and is succeeded by the same in the hands and feet; after which the pustules break and discharge their contents, and then becoming dry, they fall off in crusts, leaving the skin which they covered of a brown red colour, which appearance continues for many days. In those cases where the pustules are large, and are late in becoming dry and the scabs in falling off, they are very apt to leave pits behind them; but where they are small, suppurate quickly, and are few in number, they neither leave any marks behind them, nor do they occasion much affection of the system.

In the confluent small-pox, the fever which precedes the eruption is much more violent than in the distinct, being attended usually with great anxiety, heat, thirst, nausea, vomiting, and a frequent pulse, and often with coma or delirium. In infants, convulsive fits are apt to occur, which either prove fatal before any eruption appears, or they usher in a severe form of the disease.

The eruption usually makes its appearance about the third day, being frequently preceded or attended with a rosy efflorescence, similar to what takes place in the measles; but the fever, although it suffers some slight remission on the coming out of the eruption, does not go off, as in the distinct kind; on the contrary, it becomes increased after the fifth or sixth day, and continues considerable throughout the remainder of the disease.

As the eruption advances, the face, being thickly beset with pustules, becomes very much swelled, the eyelids are closed up, so as to deprive the patient of sight for the time, and a gentle salivation ensues, which towards the eleventh day is so viscid as to be spit up with very great difficulty. In children, a diarrhœa usually attends this stage of the disease instead of a salivation, which is to be met with only in adults.

The vesicles on the top of the pimples are to be perceived sooner in the confluent small-pox that in the distinct; but they never rise to an eminence, being usually flatted in; neither do they arrive at a proper suppuration, as the fluid contained in them, instead of becoming yellow, turns to a brown colour.

About the tenth or eleventh day the swelling of the face usually subsides, the hands and feet beginning then to puff up and swell; and about the same time the vesicles break, and pour out a liquor that forms into brown or black crusts, which upon falling off leave deep pits behind them that continue for life; and where the pustules have run much into each other, they disfigure and scar the face very considerably.

Sometimes it happens that a prutrescency of the fluids takes place at an early period of the disease, and shows itself in livid spots interspersed among the pustules, and by a discharge of blood by urine, stool, and from various parts of the body, such as the nose, mouth, and ears. This constitutes the malignant species of the disease.

In the confluent small-pox, the fever, which, perhaps, had suffered some slight remission from the time the eruption made its appearance to that of maturation, is often renewed with considerable violence at this last-mentioned period, which is what is called the secondary fever; and this is the most dangerous stage of the disease.

It has been observed, even among the vulgar, that the small-pox is apt to appear immediately before or after the prevalence of the measles. Another curious observation has been made relating to the symptoms of these complaints, namely, that if, while a patient labours under the small-pox, he is seized with the measles, the course of the former is generally retarded till the eruption of the measles is finished.* The measles appear, for instance, on the second day of the eruption of small-pox; the progress of this ceases till the measles terminate by desquamation, and then it goes on in the usual way. Several cases are, however, recorded in the "Medical and Physical Journal," as likewise in the third volume of the "Medical Commentaries," in which a concurrence of the small-pox and measles took place without the progress of the former being retarded.

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* See Dr. Duncan's Medical Commentaries, vol. i.

Mr. Marson observed seven cases, and Dr. Goodfellow three, in which small-pox and scarlet fever affected simultaneously the same individuals.*

The only diagnosis that is necessary is between small-pox and chicken-pox. In the latter the pustules commonly go back, without coming to proper suppuration. Their number, size, appearance, and course, differ very essentially. There is great reason to suppose, however, that the one disease is sometimes mistaken for the other, which may account for many of the supposed failures of the vaccine inoculation.

The distinction is sufficiently apparent between chicken-pox and the small-pox when each of these diseases appears in its proper colours; but when the latter is peculiarly mild, and the former extraordinarily violent, which is sometimes the case, then all the discriminating marks are obscured.

After all it may be doubted whether we have not here a distinction without a difference. At least M. Rayer seems to think so, and we quote a part of his conclusions only to this effect, from pages 378-9. of the translation of his work on "Diseases of the Skin," by Dr. R. Willis. "To say," he remarks, "that the symptoms of varicella (chicken-pox) are essentially different from those of variola (small-pox) is absurd, inasmuch as the same eruption, in a multitude of cases, has been considered as varicellar by some, and as variolous by others."

"To sum up, then, none of the objections to the theory, according to which variola and varicella depend on the same cause, appear to me of any weight; none of them cast a doubt upon the fact of the common origin of variola and varicella, under the same epidemic influence, and especially that of the mutual and reciprocal development, in certain circumstances, of the one by the contagion of the other."

The distinct small-pox is not attended with danger, except when the eruptive fever is very violent, or when it attacks pregnant women, or approaches nearly in its nature to that of the confluent; but this last is always accompanied with considerable risk, the degree of which is ever in proportion to the violence and permanence of the fever, the number of pustules on the face, and the disposition to putrescency which prevails. When malignancy and confluence are associated, the case is hopeless. The mortality in small-pox of the simply confluent is computed to be about three in five; but of every six persons who receive small-pox in the natural way, one dies in general.

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* Medico-Chirurg. Transactions, xxx. pp. 121. 123.

Dr. G. Gregory's table, inserted at page 306. of the volume before quoted, gives a much greater mortality than this, exhibiting 157 deaths in 396 cases of natural small-pox, in those unprotected by vaccination, or rather more than 1 death in 2·6 cases. These results were observed at the Small-pox Hospital in 1838, and as it is probable that severe cases would be sent thither in larger proportion than milder ones, the rate of mortality is in all likelihood greater than would obtain among the whole number of persons attacked. The deaths were 21 in 56, or not quite 2 in 5, among those labouring under the confluent form who had previously been vaccinated; so that even in these there was some diminution of the rate of mortality, since 149 died in 295 of those suffering under this form of the disease, without protection, *i. e.* at least 1 in 2.

When the disease proves fatal, death commonly takes place between the eighth and eleventh day; but in some cases death is protracted to the fourteenth or sixteenth. The confluent small-pox, although it may not prove immediately mortal, is very apt to induce various morbid affections.

Both kinds of small-pox leave behind them a predisposition to inflammatory complaints, particularly to ophthalmia and pneumonia; and they not unfrequently excite scrofula into action, which might otherwise have lain dormant in the system.

The regular swelling of the hands and feet, upon that of the face subsiding, and its continuance for the due time, may be regarded in a favourable light. Violent eruptive fever, delirium, stupor, severe vomiting, dyspnœa, sudden disappearance of the eruption, subsidence of the swelling of the face or extremities, suppression of saliva, or depression of the pustules, followed by much prostration of strength, pallor of the skin, great anxiety, syncope, or convulsions, are appearances which denote the greatest danger. The disease in its progress assuming a malignant character and typhoid type, and the pustules becoming livid, or being interspersed with petechiæ, portend a fatal termination.

The dissections which have been made of confluent small-pox have never discovered any pustules internally on the viscera. From them it also appears, that variolous pustules never attack the cavities of the body, except those to which the air has free access; as the nose, mouth, trachea, the larger branches of the bronchia, and the outermost part of the meatus auditorius. In cases of prolapsus ani, they likewise frequently attack that part of the gut which is exposed to the air.

Where the febrile symptoms have run high and the head has been much affected with coma or delirium, the vessels of the brain appear, on removing the cranium and dura mater, more turgid, and filled with a darker-coloured blood than usual, and a greater quantity of serous fluid is found, particularly towards the base of the brain. Under similar circumstances the lungs have often a darker appearance, and their moisture is more copious than usual; occasionally they are found loaded with a purulent effusion. It is very common to find evidence of actual inflammation in the larynx and trachea. A copious dark-coloured and viscid secretion lines their inner membrane, which appears highly vascular; but the chief appearances within the chest, according to Dr. Gregory, are those presented by the serous membrane. The pleura of one side (rarely, if ever, of both sides), is found to exhibit the marks of recent, and perhaps of very intense, inflammatory action. It appears highly injected with blood, and covered with a thick layer of coagulable lymph, while there is abundance of sero-purulent fluid in its cavity.

The freedom of the abdominal viscera, according to the same author, from urgent symptoms during life, and from all traces of disorganisation after death, is a remarkable feature of this disorder.

When a person who has never had the small-pox is attacked with febrile symptoms after having been exposed to infection, or in consequence of the disease prevailing epidemically, we ought immediately to advise a strict pursuance of the antiphlogistic plan, debarring him from animal food, impregnating his drink with cooling acids, keeping his body open with gentle laxatives, and, above all, exposing him freely to cool air, as, beyond all doubt, there is not a more effectual remedy for moderating the febrile heat produced by this disease than the application of cool air; and the more urgent the symptoms, the more will the patient stand in need of it; for where the ventilation is free, it is inconceivable how refreshing it proves, and how suddenly it is capable of reducing the pulse, and of moderating all the symptoms.

The temperature of the patient's chamber should always be such that he may experience no disagreeable degree of heat, but rather a sensation of cold; and except he complains of being chilly, we need not be afraid of freely admitting the fresh air.

He should lie on a mattress covered only with a few bed-clothes, a feather-bed being apt to occasion too great an accumulation of heat. If convenient, he should have an apartment to himself, as the heat of a crowded room would be sure to prove injurious; and his body-linen, as well as that of the bed, should be shifted frequently.

In many instances, little more will be requisite than to pursue the steps which have been advised, together with the strictest antiphlogistic regimen. But sometimes the fever and general inflammation ran so high (particularly in adults of a plethoric and robust habit), as to be accompanied with a very full and quick pulse, great heat and dryness of the skin, redness of the face and eyes, considerable difficulty of breathing, acute pain in the head, stupor, or delirium; in which case it may be necessary to take away a little blood. In resorting to this operation, however, great prudence is necessary; for should a fever of a malignant nature or putrid tendency accompany the disease, bleeding might prove highly injurious. Indeed, it might perhaps be the best practice to recommend it only in those cases where the effects expected from it cannot be procured by other remedies; and even in these, local bloodletting by the application of leeches, ought sometimes to be preferred. Where the eyes look red and fiery, or coma prevails, topical bleeding may prove a valuable remedy.

At the commencement of an attack of small-pox, as at the beginning of almost all febrile disorders, it is advantageous to empty the bowels, not only of alimentary matters, but of irritating and offensive secretions. With this view it is useful to give a single brisk purgative, as three or four grains of calomel with eight of cathartic extract; while subsequently, during the continuance of the pyrexial state, the latter of these indications may be fulfilled by small doses of common salts, or some part, as the third or half, of a Seidlitz powder, taken two or three times daily.

In small-pox, as in fever, over activity is to be condemned. Perhaps the best general treatment to be pursued, in addition to keeping our patient cool and clean, is to give just such gentle saline medicines as tend to abate pyrexia, and at the same time to improve the secretions of the bowels, the kidneys, and the skin. Particular symptoms must be met as they arise.

On the coming on of the fever, the stomach in some cases is much disordered, and a constant nausea, or frequent vomiting, is apt to arise; to obviate which, it will be proper to give a gentle emetic, working it off with a few draughts of camomile-tea.

If the tenderness of the epigastrium be very great, and the vomiting very urgent, we should prefer putting a few leeches, say six or eight in an adult, two or three in a young child, on the pit of the stomach, before resorting to the emetic.

It is no uncommon occurrence for convulsive fits to attack children some short time previous to the appearance of the eruption, which are apt to alarm those who are not conversant with the disease. In this instance little more will be requisite, in general, than to admit cool air freely to the child; but should they occur at a very early period of the disorder, and be repeated frequently with any violence, they then are attended with considerable danger, and ought to be removed, if possible, by a few leeches on the temples, in number proportioned to the age of the child.

In those instances where the eruption does not come out kindly, it has been advised to immerse the whole body for a short time in a warm bath; but perhaps it may be more proper only to put the feet and legs into warm water at first, using at the same time a more generous diet, assisted by cordial medicines, such as camphor and aromatics together, wine, or even brandy: and should these means fail, the other mode of proceeding may then be adopted.

If there be great irritability and restlessness, opium in small quantities, either with the saline mixture, or a grain or two of antimonial powder, will be serviceable. When the pustules are nearly maturated, and indeed throughout the latter stages of the disease in most cases, great benefit is derived from opiates, in relieving the irritation of the skin and promoting sleep.

Where the febrile symptoms run high after the appearance of the eruption, we should give small and frequently repeated doses of antimonials, as advised under the head of Simple Continued Fever.

With the same view of lessening febrile heat and excitement, we may employ refrigerant medicines, such as nitre and saline draughts, administering the latter in the act of effervescence. Cold diluents, such as lemonade, imperial, &c., may be taken freely to allay thirst.

It will likewise be proper to avoid heat, and to expose the body to cool air. The cool regimen, in its fullest extent, is, however, by no means so necessary after the completion of the eruption, or where the fever has almost or wholly disappeared, as before. At the same time, we must be careful to avoid the opposite and more dangerous extreme of relaxing too suddenly in the employment of the cool regimen. The use of laxative medicines, or clysters, as far as is necessary to prevent costiveness, is to be continued; and with regard to the application of cold, it should at this period be regulated by the patient's feelings.

If, on the other hand, the febrile symptoms continue considerable, notwithstanding the appearance of the eruption, the plan of treatment must not be relaxed. The continued use of gentle cathartics and the cool regimen is then necessary. At an early period they are the best means of moderating the eruptive fever; they are now the most effectual for preventing the appearance of the secondary, which is always to be feared where the remission on the completion of the eruption is inconsiderable.

When a degree of cynanche is present, gargles and the inhalation of warm steam may be used.

In those cases where the pustules contain a thin watery fluid, and are accompanied with great soreness, uneasiness, loss of strength, and lowness of the pulse, the cinchona bark, in infusion or decoction, should be given, and frequently repeated if well borne; and although it may, perhaps, increase the difficulty of breathing, and render the expectoration a little more difficult, still its good effects in obviating the symptoms of irritation, and the tendency to putrescency, will greatly overbalance this disadvantage. To assist the effects of this bark, a free use of wine sufficiently diluted ought to be allowed.

In the confluent small-pox, particularly where there is a putrid tendency, where the pustules are filled with a bloody water, or where petechiæ are interspersed among them, we must also have recourse to the bark of cinchona joined with wine, together with acids, all kinds of which have been much employed in this form of the disease, but more particularly the muriatic and sulphuric

Where hæmorrhages arise, we may give alum in addition to these remedies.

If the eruption, after having made its appearance, recedes suddenly, or if the disease has arisen in a person of lax fibres, and is attended with a weak low pulse, and a sinking in of the pustules, then, besides allowing a liberal use of wine-whey, we should apply cataplasms to the soles of the feet, and blisters successively to different parts of the body, paying no regard to their being covered with pustules. Camphor, ammonia, musk, and aromatics, will likewise be advisable medicines. The warm bath will also be proper.

Where the suppuration in the pustules does not go on kindly, owing to the want of rest, it will be necessary to give opiates. About twenty drops of the tinctura opii may be administered to an adult every night at bed-time, and half or one teaspoonful of the syrupus papaveris to young children. If opiates are given when the excitement is considerable, or if they are found to induce coma, their use will certainly be improper; but in all other cases, more particularly during the maturating stage, in the confluent small-pox, a quantity of opium, sufficient to allay restlessness, provided care be taken, by administering gentle laxatives, to prevent its constipating effects, will be sure to prove beneficial. The acetate of morphia is a remedy lately introduced into practice, and may be employed where opium cannot be prescribed with benefit. The proper dose for an adult is a quarter of a grain, repeated three or four times in the twenty-four hours.

The secretion from the glands of the mouth and throat in the confluent small-pox usually goes on without the help of medicines until near the time of the completion of the suppuration, so that it is only necessary to defend the parts from the matter secreted, by giving mucilaginous drinks, such as barley-water, linseed-tea, or a solution of gum acaciæ; but towards the time of its being completed, the secretion is apt to become so thick and viscid as to be expectorated with the greatest difficulty, and often even to endanger suffocation. In this case we should give an emetic *, after which the mouth and throat must be washed out frequently with some proper gargle, as below †, or as advised under the head of Inflammatory Quinsy. If the emetic does not afford a permanent relief, we may then apply a blister to the external fauces with some prospect of advantage. We think that a warm soft poultice to the throat would often do better than either of these severe measures; at all events this should be first tried.

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* ℞ Antimon. Potassio-Tart. gr. jss.	* Take Tartarized Antimony, one grain and a half.
Aq. Fontan. f. ℥j.	Pure Water, one ounce.
Oxymel. Scillæ, f. ℥ss. M.	Oxymel of Squill, half an ounce.
Ft. haustus.	Mix them for a draught.
† ℞ Infus. Rosæ Comp. f. ℥vij.	† Take Compound Infusion of Roses, seven ounces.
Mel. Optim. f. ℥ss.	Honey, half an ounce.
Ft. gargarisma. M.	Mix them for a gargle.

Determination to the head or chest. or other viscera, requires blisters, pediluvium, and sinapisms to the feet.

Obstinate vomiting, which in this disease often proves a very troublesome as well as dangerous symptom, is most effectually allayed by saline medicines, taken in the act of effervescence, and joined with opium.[*] If this expedient fail, we may try three drops of the dilute hydrocyanic acid of the Pharmacopœia, given in a tablespoonful of barley-water; or, when there is at the same time a failure of power, one or two drops of creasote may be administered in the same vehicle.

Profuse diarrhœa is a troublesome occurrence in the confluent small-pox, particularly in children; but unless this symptom produces a dangerous degree of debility, we should be cautious in checking it; and even when it does occasion considerable debility, the safest plan will be to endeavour to moderate it by an occasional dose of chalk mixture.

In all cases where there is a propensity to sweating, after the eruptive fever has passed, a cool regimen will be particularly necessary.

In the distinct small-pox there ensues little or no secondary fever; but it regularly attends on the confluent, and is always in proportion to the number of pustules, proceeding probably from an absorption of the matter. This being the case, it may be advisable to open every pustule as soon as the suppuration in it is completed; and in order to moderate the fever, as well as to prevent hectic symptoms and after-suppurations from arising, we ought to employ mild cathartics, so as to keep the bowels regularly open.

If at the approach of the secondary fever the pulse is quick, hard, and strong, the heat very great, the head much affected, and the breathing laborious, a quantity of blood, proportioned to the urgency of the symptoms, may probably be taken with safety, by means of scarifications, or leeches applied to the part most affected; but a use of gentle cathartics, and other antiphlogistic means, seems much more advisable. If, on the contrary, the patient is faint, the pustules look pale and much indented, and the extremities feel cold, with other symptoms of irritation, the case is then to be considered as of the typhoid kind; and the proper remedies to be employed are ammonia, cinchona bark, in whatever form it is found to sit easiest on the stomach, conjoined with wine and aromatics, or with mineral acids, opium, or the acetate of morphia, in the doses before mentioned.

To allay the itching of the surface, which is often very annoying to the patient during the maturation and desiccation of the pustules, dry absorbent powders have been recommended; and we think that the prepared chalk of the Pharmacopœia dusted through muslin over the parts is probably one of the best. It is a great gain if we can thus remove the temptation to scratching, which it is difficult to control, and which, if indulged, may increase the disfigurement. Many expedients have been extolled and adopted for the prevention of the pitting after small-pox. Thus some have believed that the object might be attained by covering the face carefully so as to exclude the action of air and light; and either with this view, or through faith in their medicinal or mechanical actions, various plasters, as of lead or mercury, have been resorted to; and ointments have been employed, as the mercurial alone, or mercurial ointment thickened with starch powder, two drachms of the latter being mixed with an ounce of the former, and a little smeared on the face every night and morning. We are told that in Edinburgh an oiled silk mask has long been in use for this purpose, and as is supposed with advantage; while puncturing each individual pustule has been practised by some, and the application of a solution of nitrate of silver has been confided in by others. We must confess our own inexperience of the effects of these various means; yet avow at the same time our scepticism as to the efficacy of any, our apprehensions of the hurtfulness of some of them.

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[*] ℞ Potassæ Bicarbon. ℈j.
Aq. Cinnam. f. ℥x.
Tinct. Opii, ♏v.
Syrup. Cort. Aurant. ʒj. M.
Ft. haustus, quartâ quâque horâ adhibendus in actu effervescentiæ, cum cochleare amplo succi limonis.

[*] Take Bicarbonate Potass, one scruple.
Cinnamon Water, ten drachms.
Tincture of Opium, five drops.
Syrup of Orange-peel, one drachm.
Mix them, and let this draught be given every fourth hour, with a tablespoonful of lemon-juice during the effervescence.

The small-pox, particularly when it proves severe, is apt, in habits disposed to scrofula, to excite that disorder into action, when it otherwise might not have shown itself. Frequent instances of this nature occur in practice, and prove obstinate to the practitioner, as well as distressing to the patient. In all such cases we must resort to tonics, together with a generous diet, an allowance of wine or porter, and a change of air, particularly to that of the sea-side.—See SCROFULA.

In the confluent small-pox, the patient's strength must be supported by food of a light, nutritive nature, such as panado, bread-pudding, preparations of sago, arrow-root, roasted apples, &c.; and for common drink he may take thin gruel or barley-water gently acidulated, together with a little wine-whey now and then, when the febrile symptoms do not run high. If the accompanying fever is of a typhoid nature, a liberal use of wine will be proper. — See TYPHUS GRAVIOR.

OF INOCULATION.

INSTEAD of a description of this process we give the clause of the Vaccination Extension Act, passed in 1840, which renders its employment illegal.

"And be it further enacted, that any person who shall from and after the passing of this act produce, or attempt to produce, in any person, by inoculation with variolous matter, or by wilful exposure to variolous matter, or to any matter, article, or thing, impregnated with variolous matter, or wilfully by any means whatsoever, produce the small-pox in any person in England, Wales, or Ireland, shall be guilty of a misdemeanor, and shall be liable to be proceeded against, and convicted summarily before any two or more justices of the peace in petty sessions assembled, and for every such offence shall upon conviction be imprisoned in the common gaol, or house of correction, for any term not exceeding three months."

VARIOLÆ VACCINÆ, OR COW-POX.

In many of the dairy counties it had been long known that the cows are liable to an eruption on their paps or udders, which was occasionally communicated to the hands or arms of those who milked them, producing an ulcer and some degree of fever; and it had been observed by the people of those countries, that they who had gone through this disease, known by the name of cow-pox, were not liable to the small-pox.

The disease had not, however, undergone any medical investigation, until the late Dr. Jenner, then of Berkeley, in Gloucestershire, paid particular attention to it, and in the year 1798 published his work on it. He very satisfactorily ascertained that it was a much milder disease than the small-pox, and that the fact was true, that in general it secured those who had undergone it from subsequent variolous infection. He also observed that the vaccine pox is not communicable but by inoculation; and that on this account it might be inoculated in a family without endangering others — a circumstance of the greatest importance. On the suggestions of Dr. Jenner, many surgeons were induced to adopt the practice of substituting the one disease for the other, and its efficacy is in most cases now fully established.

With respect to the origin of the disease in the cow, we are informed by Dr. Jenner, that he traced it to the diseased heels of horses which had been affected with the grease. The person appointed to apply the dressings to them not paying a due attention to cleanliness, and incautiously bearing his part in milking the cows, with some particles of the infectious matter adhering to his fingers, had communicated the disease to them. From numerous experiments made, however, at an early period, by the late Dr. Woodville, and by Mr. Coleman, professor at the Veterinary College, with the matter of grease, taken in the various stages of that complaint, no such effect has been produced upon cows. Neither were inoculations with this matter, nor with several other morbid secretions in the horse, productive of any effects upon the human subject, which by no means accord with the facts adduced by Dr. Jenner on this point.

Some communications through the medium of the "Medical and

Physical Journal,"* in consequence of still later experiments, seem, however, to give support to Dr. Jenner's opinion as to the origin of the disease.

Perhaps these contrary results may be reconciled, if we suppose, with M. Rayer, that the whole of the affections designated as grease are not of the same nature, but that several, as he has found on examination, resemble impetiginous eczema more than any other disease, while in some cases they are of the nature of true cow-pox. He cites, in support of this last position, a fact observed by M. Husson, who met with a coachman suffering from a number of spots or pustules on his wrists, resembling vaccinia, which had broken out some days after he had dressed the leg of a horse affected with grease. Cow-pox was produced in two children inoculated with matter taken from this man's wrists, which ran a regular course, and the virus was used again and again to transmit the disease.† A similar case is described in the 26th volume of the "London Medical Gazette," at p. 703., which occurred in the practice of Mr. Pakenham, but was first brought before the public by Dr. Stokes in Dublin. Here a coachman became affected with pustules exactly resembling those of the cow-pox, in consequence of having several times wiped a wound on his face with a sponge previously employed in dressing the greasy heel of a horse. These cases are deficient, however, inasmuch as they show only a physical resemblance, but not a like protective power in the disease thus communicated, with that of cow-pox; yet they add considerable weight to the arguments in favour of the existence of a certain affection of the heel of the horse, from which a disease identical in power with vaccinia may be produced by inoculation, either in man or in the cow. In proof of the first position we find Mr. Cecly stating, at p. 683. of the volume just quoted, that he knows of several farmers who have been affected from the horse, and resisted subsequently variolation or vaccination.

But if the first point of the possible communication to man from the horse of a disease similar to vaccinia be considered proved, this strengthens the argument from analogy in favour of a like transference of the disorder to the cow; and, in truth, we find this position now so far admitted, that Mr. Ceely, in the 29th volume of the "Medical Gazette," contends for the claims of Mr. Lupton of Thame, in preference to those of Mr. Tanner, to the credit of priority in offering experimental proof of it; while Dr. Gregory admits the propagation from the horse to the cow as one of the several sources of the specific disease as observed in the latter animal. This only is to be borne in mind, that it is not the ordinary grease, more nearly akin, as Mr. Ceely also believes, to eczema impetiginoides, but a rarer vesicular disease of the horse, known to farriers as the scratchy heel, and which has been designated equine, which is possessed of these properties.

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* See vol. iv. pp. 381. 466.

† Pp. 1200, 1201. of his work on Cutaneous Diseases.

On its first investigation, some circumstances led to the supposition that the small-pox and cow-pox were originally one and the same disease—the latter being derived from the animal at some remote period, and having undergone, in the lapse of years, and by the influence of various constitutions, the changes we now experience.

This was Dr. Jenner's opinion, and on this point Dr. G. Gregory remarks, "that the recent experiments of Mr. Ceely, of Aylesbury, have proved that the cow may be inoculated with variolous matter, and that in passing through the body of the animal the matter is converted from small-pox into vaccine." But he farther observes, that "though it be admitted that cow-pox and small-pox have a common origin, it by no means follows that they are identical diseases acknowledging the same laws." He states one important difference in their effects as beyond all dispute, viz.: "that vaccinated persons are more liable to attacks of small-pox than those who have once undergone that disease;" but he has not adduced proofs of this position.

From various experiments, it appears that the vaccine disease and the small-pox are not susceptible of intermixture, but that each preserves its distinct character under all circumstances. At the Small-pox Hospital it has been noticed, that when the vaccine and variolous fluids are mixed together, and thus inserted, sometimes the vaccine pustule, at others the variolous, has been produced, each of them retaining its characteristic marks throughout. Again, it has been found, that when the two fluids are inserted separately, and so near together that the two pustules which follow spread into one, by inoculating with the fluid taken from one side of it, the vaccine pustule alone will be produced, while the fluid taken from the other excites the genuine variolous pustule with the general eruption of small-pox on the body. Another point of dissimilarity between the variolous and vaccine diseases, is this,—the inoculation of the former, we well know, supersedes the natural disease many days after exposure to infection.

The effect produced by submitting persons to the influence of variolous and vaccine matter at the same time, is, that they both prove effective; for the vaccine vesicle proceeds to its acme in the usual number of days, and the maturation of the variolous pustules is attended with a pustular eruption on different parts of the body; but when variolous matter is not inserted until the ninth day after the inoculation with vaccine matter, the action of the variolous seems to be wholly precluded.

The variolous and vaccine fluids, inoculated about the same time, restrain the action of each other. The vaccine vesicle, in this case, is smaller, and proceeds more slowly to its maturity, and the variolous pustules are small, hard, and shining, producing only a small particle of matter at their apices.

"Of all possible complications," says M. Rayer, at p. 449. of his work before quoted, "that of small-pox with cow-pox is the one which is fraught with the highest interest. These eruptions most commonly modify each other, when the two contagions exert their influence at the same time. Yet it would appear that under certain circumstances the variolous contagion is not modified in its effects. Thus at Marseilles, in the summer and autumn of 1828, in all sixteen individuals died of small-pox in spite of cow-pox which accompanied it."

We have already mentioned two of the possible sources of vaccinia in the cow; Dr. Gregory reckons altogether five. In a paper published in the 24th volume of the "Transactions of the Royal Medico-Chirurgical Society," he says, "The morbid secretions of the cow, which possess the singular properties of transplantation to the human frame, of exciting there a like disease, and subsequently of protecting the human body to a certain extent from the assaults of small-pox, may be produced in that animal in four modes.

"1. They are generated spontaneously in the cow, under certain circumstances of soil, season, and locality. Such diseased secretions are often met with in cows soon after parturition, in the spring season, and when feeding upon young grass; but they arise also from other and less known causes, and the disorder spreads like other epizootic maladies.

"2. The very same malady, developing the very same morbid secretion, is often observed to spread by contagion, that is, by the application of the diseased secretion, thus generated, to the teats of healthy cows differently circumstanced, by the hands of the milker.

"3. The same morbid secretion, possessed of the same qualities, may be, and frequently has been, generated in the teats of the cow by the application to them of matter formed by the heel of the horse. This matter may also be transplanted to man directly, without the intervention of the cow, proving that the antivariolous property does not depend on any peculiar change which the virus undergoes while passing through that animal.

"4. The same morbid secretion may be excited artificially in the cow by applying to the teats, or to the mucous surface of the vagina, vaccine lymph from the arm of a child, even though twenty years had elapsed since that lymph had been assimilated to the human constitution. To these four modes of exciting vaccinia in the cow the labours of Mr. Ceely have now added a fifth. He has shown that the very same object may be obtained by applying to the mucous surfaces of the cow the matter of human small-pox."

Mr. Ceely speaks of this disease, when arising spontaneously, as occasionally epizootic, or prevalent at the same time in several farms at no great distance, more commonly sporadic or solitary. Be this as it may, we have at present the evidence of the protective influence of the vaccine or equine disease, and the production of the former by means of inoculation with variolous matter, as strong arguments in favour of their near relation to small-pox; but we yet want the farther proof of their originating in cattle simultaneously with the occurrence of epidemics of that disease in man, or of their accidental communication to these animals from persons infected with it, as a justification of a full belief in their identity, and in the propriety of the term variolæ vaccinæ which has been long in use.

Mr. Ceely, in his observations before referred to, gives the following account of the topical symptoms of the natural disease, as obtained from the milkers: "They state," he says, "that for three or four days, without any apparent indisposition, they notice heat and tenderness of the teats and udder, which are followed by irregular and pimply hardness of these parts, especially about the bases of the teats and adjoining parts of the udder; that these pimples on skins not very dark, are of a red colour, and generally as large as a vetch or pea, and quite hard; that in three or four days, many of these having increased to the size of a horse-bean, milking is generally very painful to the animal, the tumours rapidly increase in size and tenderness, and some appear to run into vesications on the teats, and are soon broken by their hands. It is seldom," he adds, "that any person competent to judge of the nature of the ailment has access to the animal before the appearance of the disease on others of the herd, when the cow first affected presents on the teats, acuminated, oval, or globular vesications, some entire, others broken, not unfrequently two or three interfluent. Those broken have evidently a central depression, with marginal induration; those entire, being punctured, effuse a more or less viscid amber-coloured fluid, collapse, and at once indicate the same kind of central and marginal character. They appear of various sizes, from that of a pin's head, evidently of later date, either acuminated or depressed, to that of an almond or filbert, or even larger; dark brown or black, solid, uniform crusts, especially on the udder, near the base of the teats, are visible at the same time; some much larger are observed on the teats; these, however, are less regular in form and less perfect; some are nearly detached, others quite removed, exhibiting a raw surface with a slight central slough. The appearance of the disease in different stages, or at least the formation of a few vesicles at different periods, seems very evident. The swollen, raw, and encrusted teats seem to produce uneasiness to the animal only while subjected to the tractions of the milkers, which it would appear are often nearly as effective as usual. The symptoms of the disease, as propagated by contagion, do not present any essential difference."

The normal course of the natural and casual disease is completed, we are told by the same author *, in from twenty to twenty-three days; and for further details, we must refer to this and the preceding paper.

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* Medical Gazette, xxvi. p. 716

Inflamed spots begin to appear on different parts of the hands and wrists of the domestics employed in milking, which run on quickly to suppuration, assuming at first the appearance of small vesications produced by a burn. Most commonly they come out about the joints of the fingers, and at their extremities; but whatever parts are affected, if the situation will admit, these superficial suppurations put on a circular form, with their edges more elevated than their centre, and of a colour distinctly approaching to blue. In consequence of absorption, tumours appear in each axilla, the system becomes affected, the pulse is quickened, and rigors, with general lassitude and pains about the limbs and loins, with a vomiting, come on. In some instances, the head is much affected, and a delirium arises.

These symptoms, varying in their degrees of violence, usually continue for three or four days, leaving ulcerated sores about the hands, which, from the sensibility of the parts, are very troublesome, and commonly heal slowly, becoming not unfrequently phagedenic, like those from which they sprang.

The lips, nostrils, eyelids, and other parts of the body, are likewise affected sometimes with sores, in consequence of being heedlessly rubbed or scratched with the patient's infected fingers.

Dr. Jenner informs us, that he had never met with any case of the cow-pox, either taken naturally, or produced artificially, which proved fatal; but by Dr. Woodville we are told, that out of five hundred cases of inoculated cow-pox under his care, one proved fatal, which was that of a child at the breast, on the eleventh day after the matter had been inserted in the arm.

The few instances of death which have occurred from vaccine inoculation, since it has been more generally practised, may probably be referred with much justice to some unknown peculiarities of the constitution; to intervening disorders independent of the vaccine; and to inflammation excited by accidental causes in young children, especially when they have been ill fed and badly nursed—circumstances not uncommon among very poor people.

When the pustules are numerous, as sometimes happens where the disease has been received immediately from the cow, a considerable degree of fever attends; but when it has arisen from inoculation, few or no pustules are to be observed, except immediately round the wound in the arm; and little or no inconvenience is experienced.

A use of medicine seems wholly unnecessary in the cow-pox, except in those cases of the natural disease where much febrile heat attends; and then the antiphlogistic plan ought to be pursued; and again, in some few cases of the inoculated disease, where an erysipelatous inflammation extends from the areola over the arm, when it becomes necessary to employ a cold lotion to the part, as well as cooling medicines internally.

When inoculation is practised, the punctured point after twenty-four or thirty-six hours usually begins to inflame, and by the help of a microscope, a very small vesicle with a rounded edge may be observed to arise. This appears on the third day to the naked eye as an elevated point. By the fifth day the vesicle is quite distinct, and lymph may be procured from it, which is nearly transparent. About the eighth day an inflamed circle begins to form round the vesicle, which is now in its most perfect state. On the tenth day the areola is at its height, and the vesicle assumes a pearl colour, is perfectly circular, and well elevated. About the fifteenth day the vaccination may be considered as completed. The lymph in the mean time becomes muddy and dark, and ultimately desiccates into a mahogany-coloured crust, which drops off towards the end of the third week, leaving behind it a small circular and indented eschar, with a well-defined border. The regular process of the vesicle may be considered as affording a strong presumption, but insensibility to renewed insertion of vaccine virus is held by Dr. Gregory to be the only legitimate criterion of perfect vaccination.

This author farther remarks, that a too rapid course of the vesicle — a premature areola, and an abbreviation of the ordinary course of the disease — undoubtedly indicates imperfection; but it is otherwise with delay, for full time is then given for the development of constitutional influence.

He also states, in a paper published in the 24th volume of the "Medico-Chirurgical Transactions," that the full measure of the vaccine influence is received by each individual on the eighth day from insertion, that is to say, where the disease runs its regular course; while the character of the cicatrix subsequently formed depends more on accidental or secondary, than it does on specific or primary, inflammation, and that hence small reliance can be placed on it as a measure of vaccine protection.

In inoculating for the vaccine disease, we should carefully attend to the following circumstances:—

1st. That the child should be in perfect health, and, if possible, not less than two, nor more than six months old, and that the matter should not be taken later than the eighth day of the disease.

2dly. That the fluid should be perfectly transparent, as it is not to be depended upon if it has become in any degree opaque.

3dly. That the matter, if not used immediately, should be allowed to dry gradually and thoroughly before it is laid by for future use.

4thly. That the punctures can scarcely be made too superficial, and on no account should more than two or three be made in each arm.

5thly. That attention should be paid to repress, as soon as may be, any excess of inflammation that may arise; and this is best done by cold and restringent applications.

With respect to the operation of vaccination, it will be important to ascertain that the vesicle has not only acted locally, but effected the desired change on the constitution; hence has originated the practice of testing, by revaccinating during the progress of the vaccine vesicle, as on the fourth or fifth day. This constitutes what is called, after the discoverer, Bryce's test; and a recourse to it is recommended by Mr. Aikin and others. "In this case," writes that gentleman, "the second vesicles will have their progress hastened, and they will assume the areola at the same time with the first." This he considers undeniable proof of constitutional affection.

In the infancy of vaccination the most sanguine hopes were entertained of its results; and little less was anticipated from its universal diffusion than the complete extinction of small-pox. In the course of some years, however, cases began to arise in which those who had been subjected to its influence were found not exempt from the disease against which it was designed to protect them. For a while these were believed to occur to such only as had undergone the cow-pox in a way that was imperfect and unsatisfactory; but with the farther progress of time it became manifest that this explanation was not universally applicable. It was found, however, that in many instances they who had previously been vaccinated suffered from a much milder form of disease when labouring under small-pox than the majority of those who had not been submitted to that process. Not to mention other examples, we may refer to the account given by Dr. Alexander Monro, in 1818, of cases either witnessed by himself or furnished to him by others, in which the evidence of previous perfect vaccination is convincing, and the symptoms of the subsequent modified small-pox are detailed with minuteness and accuracy. We find him, at p. 100. of his work, attributing the then frequency of small-pox to causes still deserving our attention; as, "1st, to the neglect of vaccination; 2dly, to the inoculation for cow-pox being performed in an imperfect manner; and, 3dly, to the atmosphere having been so much contaminated by the contagion of small-pox, that neither perfect vaccination nor the small-pox itself had proved in all cases a sufficient barrier against the contagion of that pestilence; 4thly, to the inoculation of small-pox," a practice now happily forbidden by law. It is consonant with subsequent experience, that epidemics may arise against which all protective measures possess only a diminished power.

We cannot enter into a full description of the change of character observed in the small-pox as it occurred in those who had previously been vaccinated. In recapitulating its most striking features, Dr. Monro remarks, that the eruption appeared on the third day as in the mild small-pox, and was first perceptible on the hands and legs, and gradually extended to the face and trunk of the body; and that when it was fairly out, the quickness of the pulse, thirst, and febrile symptoms suddenly disappeared, and did not return on the tenth or eleventh day, as frequently happens in common, mild, and malignant small-pox. It merits particular attention, he subsequently adds, that the greater number of the pimples do not pass on to suppuration in the small-pox after vaccination, for many of the smaller die away on the third or fourth day. One of this author's conclusions, given at page 261., is, that those that have been vaccinated, when exposed to small-pox, have either escaped altogether, or been afflicted with a form of that disease, which, though at first severe, has, after the sixth or seventh day of the eruption, almost invariably disappeared with a rapidity which perhaps forms the most striking feature of the disease. He had not met with a single fatal case of small-pox after vaccination, nor been informed of such an event by any one of his numerous correspondents in Scotland; and two only from England had been communicated, by Mr. Christian, of Liverpool.

But if at this time the deaths from small-pox after vaccination were so few or so little heard of, they afterwards became more numerous, though still certainly not very considerable in amount. Thus we read, that in the epidemic of Marseilles during the year 1828, of 30,000 persons who had been vaccinated, 2000 were attacked by small-pox, and of these 20, or according to some accounts, 45, died. Still more recently, Dr. G. Gregory, in his notice of the occurrences at the Small-pox Hospital in 1838, published in the 22d volume of the "Medico-Chirurgical Transactions," has recorded 302 cases of that disease in persons vaccinated in early life, of which 30 were fatal; and again in the 24th volume of the same work, he mentions 8 deaths as occurring in 120, under similar circumstances, in the year 1840.

Now, although the rate of mortality is in each of these examples confessedly much less than that which is observed among the unvaccinated, yet the numbers of those attacked, and the numbers of those dying, are sufficient to destroy our confidence in that perfect protection which was at one time looked for from vaccination, to awaken apprehension for the future, and to suggest doubts both as to the permanence of the security afforded by cow-pox in its most perfect form, and as to the continued efficacy of the old or original virus after the numberless transmissions which it has undergone. We shall presently discuss both of these questions, which involve those of the expediency of repeated vaccination, and of the necessity or desirableness of recurring from time to time for fresh sources of lymph to the cow.

It must first be shown, however, that the introduction of vaccination, notwithstanding all the abatements which must be made in the estimate of its powers, is still one of the greatest boons that science ever conferred upon mankind. Now this can best be done by comparing the ravages committed by small-pox before and since this important epoch; and we may, in the first place, appeal to general experience in the words of the "Report of the National Vaccine Establishment for 1838," where the rarity of an example of disfigurement by small-pox now to be found in theatres, in churches, or any large assemblage of the people, is adduced in proof of the continued protective property of the lymph employed. In the next succeeding report it is stated, in defence of the protective influence of the cow-pox, that "since the introduction of inoculation the loss of life by small-pox within the bills of mortality was 5000 annually, but since vaccination has superseded inoculation the number of deaths has decreased gradually until it amounted to only 200 in 1837. In the course of the year 1838, in which small-pox prevailed epidemically, there have died 800 of this disease; not more, after all, than one-sixth of the former number, notwithstanding the increased population of the metropolis and its neighbourhood." Dr. T. Percivall, of Manchester, in the 5th volume of the "Medical Observations and Inquiries," has published an account of the mortality in that town for six successive years, from 1769 to 1774, as obtained from the register of its Collegiate Church. The deaths within this period were, from small-pox 589, from all causes 3807. This makes the relative mortality from small-pox to be 15 per cent., or one in six and a half: a very high rate, only to be accounted for by the occurrence of two epidemics within the time included in the estimate. In London, according to the same author, from 1762 to 1772, the average proportion of deaths by the small-pox is 109 in 1000, or about a ninth of the whole. In the metropolis during thirteen weeks, terminating on the 31st of July, 1847, the deaths from small-pox were 255, those from all diseases 11,989. This is nearly at the rate of 2·13 per cent., or not quite a fourth of the former rate.

But if these evidences of the benefits from vaccination seem some of them vague and inconclusive, and others based on observations which, with reference either to length of time, or the space and numbers embraced by them, appear to be insufficient in extent, we have yet other facts to adduce against which such objections cannot be raised. In our search after data whereby to determine the relative mortality of small-pox before the introduction of vaccination, a work entitled "A Collection of the yearly Bills of Mortality from 1657 to 1758," was pointed out to us by the kindness of Mr. Thompson, of the London Institution. From this book we have obtained the respective numbers of those dying from small-pox, and from all causes, for forty successive years, from 1719 to 1758, when the tables terminate; and arranging them in four decennial periods, we find that the deaths from small-pox averaged 8·43, 7·874, 7·329, and 9·181 per cent. of the whole mortality of the several decades taken in order. The average decennial mortality from small-pox being 20,652, and from all causes 253,082, we get 8·16 as the average per centage mortality for the whole term. Now it will be observed that no one of these rates gives so high a proportionate mortality to small-pox as that attributed to it by Dr. Percivall; yet, taking the average rate of the whole forty years, and comparing it with results obtained from the valuable modern reports of the Registrar General, we can show an immense saving of life as consequent upon the diminished ravages of small-pox. It appears from the Report for 1844, that the total deaths in the metropolis for the five years from 1838–1842, was

245,200, of which, if the average rate above deduced had continued undiminished, 20,008 would have been due to small-pox; whereas the actual deaths from that disease were only 7071. Thus, then, in the metropolis alone, and even during a period in which small-pox was more than usually rife, having twice visited us epidemically, we find a diminution of 12,927 deaths, arising, as we must suppose, from some cause or causes that have come into operation in the interval between the two periods which are the subjects of comparison. We have given 8·16 per cent. as the relative mortality from small-pox in London from 1719 to 1758, and as such we consider it a fair measure of the ancient average metropolitan mortality from that disease; the recent average rate of small-pox mortality in London (as obtained from the Registrar-General's Reports), for the five years 1838–1842, is 2·88, or little more than one-third of the former; while the rate for all England is somewhat less, or 2·567 per cent. only. If, then, we suppose, that in the times past to which we have referred, the rate of mortality from small-pox throughout England bore the same proportion to that of the metropolis as in the present day, we shall have 7·273 to represent the ancient average mortality from small-pox throughout England and Wales. And if this rate had continued undiminished, instead of only 44,534, we should have had 126,152 deaths from that disease during the recent five years before spoken of. All this argues strongly in favour of vaccination; but this is not all that is to be urged in its behalf. It must be remembered that vaccination has not been universally adopted: some portion, though it may be difficult to say what portion, of the people are still unvaccinated. This is matter of notoriety, and is besides proved by Dr. Gregory's report of the admissions into the Small-pox Hospital of 393 unvaccinated persons in 1838, and of 194 in 1840. Now if, in the absence of any certain guide, we follow Mr. J. Curtis in his estimate of the proportion of the unvaccinated (as given at page 209. of the 2d volume of the "Lancet" for 1844), and assume that it amounts to one-third of the population, we must deduct from the whole number of deaths by small-pox the number due to this third, at the ancient rate of mortality, before we can fairly appreciate the protective influence of vaccination. And reasoning thus, we find that for England and Wales 42,050, and for London 6670 deaths from small-pox are due to the unvaccinated part of the community, leaving 2490 and 400 as the numbers of deaths belonging to the vaccinated, in the kingdom and metropolis respectively. Hence we should have in England and in London the average relative mortality from small-pox, among the vaccinated, ·215 and ·244 per cent., or about one thirty-third of the former rates among the unprotected population of the same localities. If these conclusions, derived as they are from somewhat extensive data, be at all near the truth, they will go far to prove Mr. Curtis's assertion, when he says of vaccination that its value is much greater than that of any known remedy for any known disease at all comparable to small-pox in mischief to the human race.

There is a point of some interest with regard to the beneficial effects of vaccination, which we must not pass by altogether unnoticed. Some have attributed to it the increase of other disorders, as measles and scarlet fever, in depreciation of the advantages which it might directly confer. This allegation has been the subject of some discussion, and we proceed to investigate it with reference to one of these diseases, namely, measles. We begin, however, by remarking that it could hardly be otherwise than that some increase in the mortality from measles, and other diseases, should be consequent on the decrease in the fatality of small-pox, and we proceed to inquire the extent to which this has been observed. We appeal, in the present instance, to the same documents of which we have before availed ourselves, to ascertain the ancient and modern per centage rate of mortality from measles; that is to say, that which preceded, and that which has followed, the diffusion of vaccination. Now we find that in London the mortality from measles was, for the forty years from 1719 to 1758, at the average rate of ·7076 per cent. of the whole mortality; for the five years from 1838 to 1842 it was 2·494, or more than three times as great; while that for England was 2·44. The total of deaths from measles in London, in the five years, was 6022; whereas, according to the ancient rate of mortality, it would have been only 1736: so that we have, under this head, an increase of deaths to the extent of 4286. The mortality in England for the same five years was, from measles, 42,413; whereas, according to the ancient rate, it would have been 12,077: so that the increase of deaths for England from this disease is 30,336. Neither scarlet fever nor hooping-cough are made separate heads of entry in the old bills of mortality, so that we cannot determine how far more fatal these diseases may be at the present than in former times; yet we consider it as almost certain that they too must have become proportionally more destructive.

We may recapitulate the whole matter briefly thus. It appears that in the five years, 1838–1842, there should have died of small-pox in England and the metropolis, according to the ancient rates, 126,152 and 20,008; whereas the numbers actually destroyed by this disease during this period, and in these districts, were 44,534, and 7071: while it is farther very probable that if vaccination had been universally, instead of only partially practised, these numbers would have sunk to 3735 and 600, or even lower. On the other hand, we admit that the mortality from measles has considerably increased, since we find the deaths from this disease for the same places and period as before to be 44,413 and 6022; whereas, according to ancient experience, they should have been only 12,077 and 1736. Considering, however, that death after measles is often the result of diseases of the lungs or bowels, it seems probable that in the old accounts the numbers of fatal cases from coughs and fluxes may have been increased by many that were in fact due to measles, and that thus the ancient mortality from this last has been underrated; while in the modern tables, framed upon certificates provided by the Registrar-General, in which both the primary and secondary disease is in every case set down, it is far less likely that the same erroneous decrease in the numbers should take place. We have, nevertheless, no doubt whatever of the fact, that a large increase in the mortality has taken place under this head, as well as under those of scarlet fever and hooping-cough, and of other diseases also. Indeed, it is not possible that it should be otherwise; for while universal death continues to be the law of our nature, the enfeeblement of one mortal enemy must be accompanied, though it need not be compensated, by the increased destructiveness of others. All men must die; yet life may be prolonged, though not perpetuated, and so a great gain may be obtained. That such a gain upon the whole has been obtained, may be inferred, as a general fact, both from the statement of Mr. Babbage, in his work on Life Assurance, published in 1826, where he says that it has been shown by M. Duvillard that the introduction of vaccination has increased the mean duration of human life about three years and a half; and again, by the comparison of Dr. W. Heberden's estimate (as given at page 111. of the 4th volume of the "Transactions of the College of Physicians") of the rate of mortality in London for 1801, amounting to a little more than 1 death for every 30 of the inhabitants, with that furnished by Mr. Farr, at page 572. of the Registrar-General's Report for 1844, wherein it is shown to have been at the rate of only 1 in 41 for the year 1841, or of 1 in 39 as the average of that and the four preceding years. It greatly strengthens our argument in favour of vaccination to find that the general mortality, in comparison with which that from small-pox has undergone so marked a diminution, has itself also notably decreased in proportion to the existing population.

After what has been said above, it is scarcely necessary to state that we attach far greater importance to the universal diffusion of vaccination than to any increase of its efficacy as at present employed. We willingly concede our mede of praise to those gentlemen who, like Mr. Estlin of Bristol, have shown the practicability of resorting for new supplies of vaccine virus to the cow; but we must remark, with Mr. Aikin — no mean authority — that we have not yet obtained a shadow of proof, or even of presumption, that the renovated virus, however correct, promises more security to the coming generation than the original one, when selected with due care, has afforded to the now adult subjects of the earlier vaccination. Moreover, fortified by the concurrent testimonies of Mr. Aikin, of Mr. N. B. Ward, and by the uniform language of all successive vaccine reports in favour of the continued efficacy of the original virus communicated by Dr. Jenner himself, we cannot but join in deprecating an incautious dissemination of matter obtained from new sources, which has not stood the test of an ample experience.

An incidental remark of Dr. Gregory's, whose general feeling appears to favour recourse to lymph derived from a new source in preference to that which has been so long in use, is well deserving of notice, and naturally conducts us from the last important question which we have touched upon, to the one yet remaining, namely, that of the expediency of adopting revaccination at stated periods. The passage we refer to occurs in a memoir on the statistics of small-pox, and may be found in page 322. of the 27th volume of the "London Medical Gazette." After showing that twelve-thirteenths of the deaths from small-pox occur in subjects under fifteen years of age, the author proceeds thus:—

"Hitherto the registrars' returns afford no clue by which we may determine that very interesting question, what proportion of deaths by small-pox, throughout England, have taken place among the vaccinated? We have satisfactory evidence that, under fifteen years of age, the deaths by small-pox after vaccination are scarcely noticeable; so that the proportion must necessarily be very small, seeing that one-thirteenth only of the total mortality is subject to such a contingency." Here is strong testimony to the efficacy of vaccination as previously practised, and an indication, we believe a correct one, of the intervals at which revaccination should be attempted, if, indeed, this measure be thought necessary in a population, all of whose members shall have undergone that operation, and who will, therefore, be exposed to far less trial than at present, where the large numbers of the unprotected afford ready subjects for the disease, regenerating its virus, and diffusing it to all around them. The conclusions of Dr. Retzius, of Stockholm, are in accordance with the above. "The protection," he says, "afforded by vaccination from the close of the second year of life against the contagion of the variolous poison, usually lasts unimpaired to the end of the thirteenth year or so; after this period it begins to lose its effects, and becomes more and more uncertain on to the twentieth or twenty-first year of life." He recommends revaccination every thirteen or fourteen years; and we conceive that the repetition of the process is to be advocated on the same grounds as its original performance.

VARICELLA, OR CHICKEN-POX.

This disease, like the small-pox, seems to depend upon a specific contagion, and affects a person but once during life. It is communicable by inoculation, but affords no protection from variola.

The eruption is sometimes preceded by chilliness, succeeded by flushings and heat, pains in the head and back, thirst, restlessness, and a quick pulse; but at other times no such symptoms are perceptible. The eruption commences on the breast and back, and afterwards extends to the face, scalp, and extremities, and appears under the form of vesicles, which, when first seen, are about the size of a split-pea: they are perfectly transparent, and covered only by a cuticle as thin as that raised by a blister or scald. On puncturing them, a clear lymph is evacuated, and they neither exhibit a cellular structure, nor any depression in the centre. On the second or third day of the eruption, an irregular circle of inflammation surrounds each vesicle, and about the same time the vesicles become filled with a watery fluid somewhat opaque, but which is never converted into yellow matter, as in the small-pox (to the milder species of which it seems, however, to bear some affinity); and about the fifth day they usually dry away, and are formed into crusts or scabs.

No danger ever attends the chicken-pox; but in children the disease is often attended with an incessant tingling or itching, which induces them, by scratching, to rub off the tops of the vesicles, so that the characteristics of the disorder are frequently destroyed at an early period.

The small-pox and chicken-pox differ, in the eruption of the former being preceded by a fever of a certain duration, while that of the latter is either preceded by none, or one of uncertain continuance; in the vesicles appearing much earlier in the chicken-pox than in the small-pox, and about the second or third day being filled with serum; in the matter of the former never acquiring the purulent appearance which it always does in the distinct small-pox; and in the crusts which cover the pustules being formed about the fifth day, at which time those of the small-pox are not at the height of their suppuration.*

These distinguishing marks it will be necessary to attend to, as there is great reason to suppose the chicken-pox has not only been sometimes mistaken for small-pox, but that its matter has been used for that of small-pox in inoculation, to which may be ascribed many of the supposed cases of small-pox having appeared a second time in the same person.

In general it is only necessary to confine the patient to bed, to use a spare regimen on the first appearance of the eruption, and to give one or two cooling purgatives afterwards; but should the febrile symptoms run high, it may then be advisable to make the patient take frequent small doses of some antimonial, with saline draughts and nitre, as advised under the head of Simple Fever, or the distinct Small-pox; drinking plentifully at the same time of lukewarm diluting liquors, and keeping the body open with gentle laxatives or emollient clysters. The like treatment will also be proper in the swine-pox, which is indeed only a species of the varicella.

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* See Medical Transactions of the London College of Physicians, i. 427., on the Chicken-pox, by Dr. W. Heberden.

RUBEOLA, OR MEASLES.

This disease is an inflammatory infectious fever, attended by a cough, sneezing, defluxion of thin humours from the eyes and nose, and an affection of the skin, showing itself in red spots over every part of it, but which never come to any suppuration, as in the former disorders, but go away in a small mealy desquamation of the cuticle after a few days' continuance.

The scientific Willan divides rubeola into three species, viz. rubeola vulgaris, rubeola sine catarrho, and rubeola nigra; in the latter of which the papulæ suddenly assume a black or dark colour.

Of all the eruptive diseases, the measles approach most nearly in character to the simple phlegmasiæ, and it is said by the late Dr. R. Williams, that though many fall victims to the severity of the local lesions, no instance is known of the patient being overwhelmed or destroyed by the general depressing action of the poison, as in typhus or scarlatina. The type of the fever in measles greatly differs from that of these diseases, and the formidable brown tongue is hardly known, or only seen in a few fatal cases.

The measles arise from a specific contagion, the period of latency varying from six to ten, or even fourteen days. The disease may prevail at all seasons of the year as an epidemic, but the middle of winter is the time it is usually most fatal; and it attacks persons of all ages, but children are most liable to it. Of ninety-one deaths from measles recorded by Dr. Percivall, four only occurred in persons above five years of age; and Dr. Alison has shown, from tables framed by Dr. Watts, that in four towns of Scotland, the deaths arising from measles in those under five years of age formed ninety per cent., or nine-tenths of the whole mortality from this disease. An inspection of the Registrar-General's Reports of the mortality from measles in the several quarters of the year, from 1838 to 1842, proves a decrement during the months of July, August, and September, of nearly twenty-three per cent. below the average of the other quarters, the other three exhibiting no very marked difference in respect of their several amounts. This result, deduced on a large scale of observation, confirms the statement of Mr. P. Macgregor, that amongst the children at the Military Asylum at Chelsea, measles had been comparatively milder, and invariably less fatal, when they have prevailed in the months of June, July, August, and September, than when they had been rife in the other months of the year. The same circumstance appears to have been noticed by Mr. Field, apothecary of Christ's Hospital, and probably by others also.

We are not aware that there is in particular families the same predisposition or tendency to a severe form of this disease, that we have reason to believe often exists with regard to scarlet fever; but that particular races of men may be more prone than others to its worst attacks, appears from Dr. Holland's mention of its occurrence in the King and Queen of the Sandwich Islands, and seven of their attendants, after their arrival in London, about fifteen years ago. The disease, he remarks, respecting the source of which no information could be obtained, showed in all a malignant violence of which the examples are rare in this country, and the king and queen died of it.

A recurrence of the measles has been disputed by some; but a number of examples are recorded by different writers where the measles took place twice.

We shall cite only a few examples in proof of this position. Thus, Dr. Baillie, in the third volume of the "Medical Transactions," has given an account of five children of the same family who suffered from two distinct attacks of this disease, at an interval of about seventeen months, in both of which he had himself attended them. Much more recently, Dr. Webster, in the 23rd volume of the "Medico-Chirurgical Transactions," has brought forward three separate instances, in one of which he had himself witnessed the occurrence of the disease twice; in another, Dr. Forbes had furnished him the details of a similar return of the disease; while in the third, there is good reason for believing that the patient had been three times affected by it. Dr. Holland, too, in his "Medical Notes," speaks decidedly on this subject, where he says, "In my own practice I have seen several instances of secondary measles, in which the proofs were unequivocal of prior occurrence; many more in which there was presumption without certainty. It seems allowed on all hands, that the rubeolæ sine catarrho, as stated by Willan, afford no immunity from a subsequent attack of the more ordinary forms of measles; but in the cases referred to above, it was not this variety that was observed in either of the attacks.

The infectious nature of measles is a generally admitted fact; its capability of transmission by inoculation has been proved by Drs. Home and Speranza; and its conveyance by fomites has also been demonstrated, according to Dr. R. Williams, by the experiments of these gentlemen.

The poison of measles, we are told by Dr. Williams, may co-exist with many other poisons. Measles and small-pox have been known to run their course together, and the combination is generally fatal. The co-existence of cow-pox and measles, or of hooping-cough and measles, is said to be of no unfrequent occurrence. We believe, however, that although the poisons may certainly exist simultaneously in the system, the more usual event is for the manifestation of one of the diseases to be suspended till the other has run its course, when the former will commence or continue its delayed or interrupted progress.

We proceed to point out the peculiarities by which measles may be distinguished from scarlet fever, the only disease with which there is much hazard of confounding it.

The precursory fever of measles is for the most part of longer duration, the eruption not appearing till the third, fourth, or even fifth day in the former, while it generally commences on the second, or less frequently on the third day in the latter. There may be redness about the eyes, and some affection of the membranes lining the nose, cheeks, and fauces, in both diseases; but whereas, in measles, there is a serous secretion causing running at the eyes and nose, intolerance of light, and sneezing, in scarlet fever these parts remain dry, and are less sensitive. The fauces in measles, if reddened, are at first dry, and if afterwards secreting, they do not exhibit those little masses of opaque mucus much resembling sloughs, nor give rise to the ulcerations so common in scarlatina. We think, too, that in measles, the pulse is rarely so rapid as in scarlet fever, the temperature of the skin not so elevated, and that delirium and convulsions are less apt to arise.

The red, elongated papillæ of the tongue, showing themselves through a white mucous coating, or projecting from the whole reddened surface, will sometimes indicate scarlet fever, even in an early stage of its progress; and there is an absence of the cough, and difficulty of breathing, which often attend that of measles. As regards differences in the eruption, that of measles is less vivid; it is said to possess greater roughness to the touch from the minute papular elevations in the skin, and to have a tendency to assume a more crescentic form, while that of scarlet fever is more smooth and uniform. We believe that these marks may sometimes, but not always assist us, for in scarlet fever we have seen the skin as rough and as mottled as in any cases of measles; and the crescentic forms in this last often require a vivid imagination to discover hem.

The sequelæ of measles are such as might be expected in a disease whose secondary influence falls on the mucous membranes of the lungs and bowels. They are cough, with difficulty of breathng, and a troublesome inflammatory diarrhœa. The occurrence of either, or both of these maladies, is very common. Ophthalmia is said to be frequent also.

The sequelæ of scarlatina are more numerous, general dropsy being among the most frequent. In particular epidemics, painful affections of the joints, resembling rheumatism, are observed; and t is common for the affection of the throat to extend itself to the membrane lining the ears, and to give rise to long-continued deafness; or in a severer form to produce, first, discharges, to denude the bones, destroying the organ of hearing; or in yet rarer instances to propagate itself to the membranes of the cavity of the skull, and thus to produce death. We have seen, besides, glandular swellings n the neck, followed by extensive abscesses, or sloughing sores of the cheek or in the groin, jeopardise or terminate the existence of the exhausted patient.

The eruption of benign measles is preceded by chilliness and hivering, succeeded by heat, thirst, anxiety, pains in the head, back, and loins, heaviness and redness of the face and eyes, with an effusion of tears, swelling of the eyelids, nausea, and perhaps vomiting; and with these symptoms there are a dry cough, hoarseness, hurried respiration, difficulty of breathing, frequent sneezing, and a discharge of acrid water from the nostrils. The pulse is at the same time frequent and strong.

In alarming cases, delirium or coma supervene. This last symptom, however, so frequently attends the eruptive fever of measles, that by some practitioners it is regarded as one of its diagnostics.

In measles, as in other febrile diseases, the symptoms generally suffer some remission towards the morning, returning, however, in the evening with increased severity.

About the third or fourth day, small red spots, somewhat similar to flea-bites, appear in clusters about the face, neck, and breast, and in a day or two more the whole body is covered with them. They do not rise into visible pimples, but by the touch are perceived to be a little prominent.

The febrile symptoms do not, however, abate on the appearance of the eruption, as happens in the small-pox; but, on the contrary, are usually much increased, and they do not cease till after the desquamation takes place. The cough, hoarseness, difficulty of breathing, and defluxion from the eyes and nostrils, seem likewise greatly aggravated.

On the fifth or sixth day, the spots from a red are changed to a brownish hue, and they begin to die away about the face, never having proceeded to any kind of suppuration; about the eighth or ninth day they disappear on the breast, and other parts of the body, with a mealy desquamation of the cuticle. About this period it is no uncommon occurrence for a diarrhœa to ensue.

The febrile and other symptoms being mild, a gentle diarrhœa, a free and copious expectoration, a moisture on the skin at the appearance of the eruption, and an early and free desquamation, denote a favourable termination of the disease; but a high degree of fever, hot and parched skin, hurried and difficult breathing, flushed countenance, unusually hard pulse, and the mucous membrane of the larynx, trachea, and bronchial ramifications being greatly inflamed, severe diarrhœa, the vomiting continuing after the eruption, great pain in the head and eyes after it, considerable degree of coma or delirium, the eruption becoming of a livid hue, with great prostration of strength, small intermittent pulse, petechiæ, and other marks of putrescency, point out the highest degree of danger. The existence of typhoid symptoms, along with a severe pneumonic affection, always increases the danger.

The consequences attendant on the measles are frequently more to be dreaded than the immediate disease; for although a person may get through it, and appear for a time to be recovered, still pulmonary consumption and hectic fever may afterwards arise and destroy him, or an obstinate ophthalmia will ensue.

Measles, as well as small-pox, not unfrequently call into action a disposition to scrofula, where such happens to exist in the habit.

Another bad consequence of the measles is, that the bowels are often left by it in a very weak state ; a chronic diarrhœa remaining, which has sometimes proved fatal.

The morbid appearances to be observed on dissection of those who die of the measles, are pretty much confined to the lungs and intestines; the former of which always show strong marks of inflammation, as muco-purulent secretion in the bronchia.

Where the patient dies under the eruption, the trachea and larger branches of the bronchia, as in the small-pox, are often found covered with it, which may account for the increase of the cough after the appearance of the eruption.

In some instances, the measles make their attack in a mild manner, and go through their natural course without medical aid; but in others the febrile symptoms run high, particularly after the appearance of the eruption, and are accompanied with a strong pulse, much coughing, great difficulty of breathing, pain in the chest, and other symptoms of pneumonic inflammation; in which cases it will be proper to draw off a quantity of blood from the arm, proportioned to the age and habit of the patient. Bleeding from the arm is indispensable, and must be repeated in proportion to the urgency of the symptoms. Even children of a tender age require this evacuation in measles, for which leeches and cupping afford but an imperfect succedaneum. Usually children do not bear general bloodletting well; but they bear it better in measles than in almost any other disease. The immediate danger from pneumonia, and the more distant, but not less alarming risk of phthisis, render it advisable to check the pneumonic symptoms in the speediest and most effectual manner.

Topical bleeding, by means of leeches to the chest or head, when symptoms of local inflammation in either of these are only slight, may be more advisable than venesection in infants. So long as a considerable difficulty of breathing exists, the topical abstraction of blood from the chest, by means of leeches, or the scarificator with cupping-glasses, may be repeated from time to time. The treatment should in other respects be such as is calculated to subdue inflammatory action; and ipecacuanha, on account of its having no tendency to irritate the bowels, is for this purpose to be preferred. Such a mixture as that prescribed below * will often be of service in the case of a child between one and two years of age. The bowels should be regulated if they do not act spontaneously, and for this purpose small doses of Epsom salts, as half a drachm

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* ℞ Pulv. Radic. Ipecac. gr. iij. ad gr. ix.
Mistur. Acaciæ,
Syrup. ā ʒij.
Aquæ destillatæ, ℥j.
Potassæ Nitratis, gr. xv.
Misce. Sumat cochl. ij. minima ter die, vel quartâ quâque horâ.

* Take Powdered Root of Ipecacuanha, three to nine grains.
Mixture of Acacia,
Syrup, of each, two drachms.
Distilled Water, one ounce.
Nitrate of Potass, fifteen grains.
Mix. Let two teaspoonfuls be taken thrice daily, or every four hours.

for an adult, given three or four times a day, have been recommended, and in mild cases this treatment, with attention to diet, may be all that is needed. For children, however, on account of the great susceptibility of the mucous membrane of the intestines, and in all cases where there are threatenings of an affection of the bowels, we should resort rather to castor oil, which, as in dysentery, should occasionally be given, even though a looseness be present.

It is very usual to recommend the employment of blisters for the relief of the cough and shortness of breathing that may accompany or follow measles. To this practice we have serious objections, on the ground of the fatal mischiefs which we have, in a few cases, seen to result from their use in young children, who, be it remembered, are the most frequent subjects of this disease. We think that the general objection to the application of blisters to infants, is augmented in cogency by the circumstance of the cutaneous vessels having only recently recovered from a state of excitement; and we believe, besides, that it is only or chiefly in a purely chronic condition of the mucous membrane of the lungs that the counter-irritation of blisters is likely to be of benefit, and that the condition of the internal parts, though it may have lasted for some time, is too actively inflammatory to promise such advantage from their use as will counterbalance the risk incurred. The well-informed medical practitioner, who is acquainted with the course of the disease and the resources of his own art, will neither with over anxious haste employ excessive depletions, or other hazardous remedies, for the attainment of an object, towards which he may make a surer, though perhaps a slower progress, by a continuance of the other antiphlogistic means which we have pointed out.

The treatment of measles, we conceive, should be antiphlogistic throughout, and varied in degree rather than in kind. The necessity of bloodletting, and its amount, if necessary, are points demanding the watchful consideration of the medical attendant; the dose of ipecacuanha, and the frequency of its administration, must also be varied according to circumstances, but it is by this medicine, or by such others as are suited to dysentery, and not by ordinary astringents, or not by ordinary astringents alone, that the looseness of the bowels is best combated. In some cases for allaying the irritability of the mucous membrane, either of the lungs or intestines, small quantities of laudanum may be added to the mixture already prescribed, to the extent of one minim in each dose for children between one and two years of age, and half as much for such as are a little younger.

In the event of the rash receding prematurely, an event by no means so common in this disease as in scarlet fever, we should prefer the trial of a warm bath, made somewhat more stimulating by the addition of a little salt, to the employment of stimulating medicines. These last, indeed, are seldom required, and not often well borne.

Should croup, pleurisy, or pneumonia supervene, the use of mercury, to moderate salivation, may be tried by those who have found such treatment effectual in the inflammations attacking young children. For ourselves, we confess that we have so seldom seen benefit arise from its employment in such subjects, that we would rather trust to other means alone. In the case of adults, or of those above five years of age, it will deserve a trial in addition to the measures before indicated.

Measles are much less dangerous to pregnant women than small-pox or scarlet fever. Heberden, indeed, says that he never knew them make one woman miscarry, or be in greater danger on account of pregnancy.

Hæmorrhage from the nose sometimes occurs between the fourth and sixth day of the disease, and about the same period in females the catamenia sometimes appear out of their proper course; but these discharges, if moderate, are not found to be prejudicial, and therefore require no alteration of the treatment. Medicines which depress the circulation are better calculated to control these than ordinary styptics; but should they threaten to become excessive, the addition of dilute sulphuric acid to the ipecacuanha mixture would probably repress them without augmenting the febrile symptoms.

For cleaning the mouth and fauces, if there be an aphthous condition, or the patient be troubled with tenacious mucus about these parts, a little honey alone, or honey of borax, placed on the tongue from time to time, is often useful.

Throughout the whole course of the measles the patient ought to be confined to his bed, and to avoid any exposure to cold air, which might repel the eruption; but in observing this precaution, he is not to run into the opposite extreme, and excite increased heat, either by loading himself with bed-clothes, or by not allowing a sufficient ventilation through his chamber. The degree of temperature should be regulated by the patient's feelings. Rubeola does not either require or bear the free application of cold, which is so potent a remedy for the most distressing symptoms of scarlatina; but, nevertheless, the propriety of coolness in the apartment and bed, as also in the drink of the patient, must be obvious.

A diluent and antiphlogistic diet being one of the best means of obviating inflammatory complaints, we ought to recommend it in the early stages of measles; but in managing it properly we should recollect its tendency to produce debility, and in weak habits be careful not to push it too far. Hence it may be advisable to improve the diet by the allowance of a little beef-tea, in order to support the strength; yet even this will seldom be required, and wine still less frequently.

For infants and very young children, milk diluted with an equal quantity of water, or thin barley-water, or, if the bowels be very irritable, with the same proportion of lime-water, will form the best diet; or if they be still at the breast, they should not be taken from it, but confined to it alone.

After the disappearance of the eruption, if the bowels be inactive, it will be proper to give one or two doses of some cooling purgative. This practice, although disregarded by many, seems, nevertheless, worthy of attention, as ophthalmia and other troublesome complaints may probably be prevented by conforming to it.

As a weeping from the eyes and slight ophthalmia are apt to ensue after the measles, it may be right to wash them occasionally with a little rose-water, in which a few grains of the sulphate of zinc (as one or two grains to the ounce) have been dissolved, and to avoid exposure to any glaring light, for which purpose a green shade is the best expedient. The convalescence from measles does not bear the use of bitter and tonic medicines, like that of many other febrile diseases.

Notwithstanding Dr. Home's success, still inoculation for the measles is seldom or never practised. The few who have been induced to attempt it, have not, I believe, made quite so favourable a report of it; on the contrary, it has been said to have produced an aggravated disease.

It has been satisfactorily ascertained that the measles delay the progress of vaccination, and of the pustule of the inoculated small-pox in the generality of cases; but a few examples are on record of small-pox and measles running their regular course at the same time in the same individual.*

When the measles prevail epidemically, it may be advisable to confine such children as have never had them to a vegetable diet, giving a gentle aperient once or twice a week. Children thus prepared will be likely to have a mild disease.

SCARLATINA, OR SCARLET FEVER.

Scarlatina is a febrile contagious disease, generally accompanied by a characteristic rash, and by a peculiar affection of the tonsils and throat. It is common in all climates and seasons, occurs principally in children, but may attack those of adult age who have not already suffered from it. It is believed that some few examples have been met with in which the same individual has undergone it twice, but such cases form very rare exceptions to the almost universal law regarding it, that a previous attack confers protection against a second.

The specific actions of the poison of scarlatina, are, according to Dr. R. Williams, 1st, a peculiar inflammation of the skin extending to the cellular tissue beneath, and producing a tumefaction of the body generally, but more especially of the hands, and this in a few cases terminates either in œdema or mortification. 2dly, An inflammation of the eyes, nose, mouth, and more especially of the throat, sometimes extending to the epiglottis, the larynx, or the trachea; and 3dly, an inflammation of the membranes either of the brain, the joints, or of the abdominal or thoracic cavities. He ought probably to have enumerated among its actions an inflammation of the uriniferous ducts of the kidney, giving rise to what has been termed desquamative nephritis.

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* See Medical and Chirurgical Observations, xiii. 163.

"The inflammation of the skin," writes the author just quoted, "is the great characteristic of the disease. It runs a given course of from six to eight days, and with few exceptions is constantly present. Its absence is probably most frequent in what has been distinguished as cynanche maligna, but is generally admitted to be a form of scarlatina. The affection of the throat in greater or less degree is very generally present. The tertiary action of the poison is only occasional."

Scarlatina has been divided into three varieties: when attended by an efflorescence, but accompanied with little or no soreness or ulceration of the fauces, it is named scarlatina mitis, or simplex; when attended with such an affection, it is called scarlatina anginosa; and when accompanied by considerable ulceration of the fauces, and symptoms of putrescency, the term scarlatina maligna is applied to it. The two latter are, however, very frequently blended together.

It has been disputed whether the scarlet fever and malignant sore throat ought to be esteemed different diseases, or only varieties of the same disease. In my opinion they are the same *in specie*, for we sometimes find that they are both epidemical together; and that even in the same family, where a number of children have been ill, either together, or immediately after one another, some have had the distinguishing symptoms of scarlet fever, and others of the malignant sore throat. Indeed it is now pretty generally admitted, that scarlatina, in all its forms, as well as the cynanche maligna, is produced by the same specific contagion.

As an epidemic, scarlatina does not always assume precisely the same appearance. This diversity depends probably, in part, upon the varying nature and constitution of scarlatina itself, independently of all extrinsic circumstances; in part, upon certain contingencies, which are common to all the inhabitants of a whole district of country,—such as the season of the year, the temperature of the air, the mildness or inclemency of the weather, together with other unknown qualities of the atmosphere; and partly upon circumstances which apply to individuals subjected to the disease, their general habit of body and constitution, their particular state of health at the time of the attack, and their situation with respect to lodging, ventilation, and cleanliness.

We have, I think, just grounds for presuming that the different species of scarlatina, such as the simplex, anginosa, and maligna, all proceed from the same source; because, under the same roof, in large families, some individuals have the disease in one form, some in another, at about the same period. The difference may arise from constitutional circumstances, and not from any difference of the contagion. Scarlatina is of a very contagious nature. Simple contact, inoculation, and inhalation, are the different ways by which the infection, not only of scarlet fever, but of other contagious disorders, may be introduced into the human body. That the simple contact of poisonous matter with the skin is far less prone to excite disease than its application in the subtle state of vapour to the more irritable surface of the nostrils and bronchia, is indisputable; but that it proves universally innocuous under every state and condition of the body, may be doubted.

Dr. R. Williams, in his "Elements of Practical Medicine," makes the following important observations with regard to the period during which a child affected with scarlatina is capable of transmitting the disease. "It is believed," he writes at p. 121., "that the generation of the poison, or power of communicating the disease, commences with the previous fever, and before the appearance of the eruption, and that it does not cease to be generated for a considerable period after the disappearance of all the phenomena of the disease. Dr. Willan thinks, that patients, notwithstanding a minute attention to cleanliness and change of apparel, are capable of communicating it, especially to children, for two or three weeks after their apparent recovery."

The same author tells us that Drs. Willan and Sims believe in its propagation by fomites, as also Mr. Murray, who instanced the case of midwives conveying it. We could ourselves adduce examples in confirmation of this belief; and we must here impress upon medical attendants, of whatever class, the imperative duty of freeing themselves thoroughly, by means of washing, ventilation, or change of clothes, from all adhering effluvia, before they pass from visiting those suffering under this disease to hold intercourse with others susceptible of contracting it.

The period of latency of scarlet fever, may vary from a few hours to ten days.

The disorders to which scarlatina bears the greatest resemblance are the measles and cynanche maligna; but from the former it may be distinguished by attending to the following characteristic marks, in addition to those noticed under the head of Rubeola.

The efflorescence in scarlatina generally appears on the second day of the fever; in the measles, it is seldom very evident until the fourth. It is much more full and spreading in the former disease than in the latter, and consists of innumerable points and specks under the cuticle, intermixed with minute papulæ; in some cases forming continuous, irregular patches; in others, coalescing into a uniform flush over a considerable extent of surface. In the measles the rash is composed of circular dots, partly distinct, partly set in small clusters or patches, and a little elevated, so as to give the sensation of roughness when a finger is passed over them.

These patches are seldom confluent, but form a number of crescents, with large intervening portions of cuticle, which retain their usual appearance. The colour of the rash is also different in the two diseases, being a vivid red in the scarlatina, like that of a boiled lobster's shell, but in the measles a dark red, with nearly the hue of a raspberry.

During their febrile stage, the measles are distinguished by obstinate harsh cough, forcing up, in repeated paroxysms, a tough acrimonious phlegm; by an inflammation of the eyes and eyelids, with great sensibility to light; by an increased discharge from the lachrymal glands, sneezing, &c. Scarlatina is sometimes attended with a cough, as also with redness of the eyes; but on minute observation, it will generally be found that the redness of the eyes is not attended with intolerance of light; that the ciliary glands are not affected; and that, although the eyes appear shining and watery, they never overflow.

The following are the chief distinctions between scarlatina mitis and cynanche maligna. The fever in the former is somewhat of an inflammatory nature, and is unattended with sloughy ulcerations in the throat; in the latter these are always to be observed, the breath is very fetid, and the accompanying fever is of the typhoid kind. In scarlatina the skin is of a brighter redness, smooth, and always dry and hot; in cynanche maligna it is red and pimply, the pimples being redder than the interstices. After all, however, they are both only modifications of one and the same disease.

Scarlatina mitis, like all other fevers, begins with languor, lassitude, confusion of ideas, chills, and shiverings, alternated by fits of heat. The thirst after a little time becomes considerable, the skin dry, and the patient is often incommoded with anxiety, nausea, and vomiting.

The alvine evacuations are most commonly of the usual quantity; the urine is high-coloured and turbid; and the pulse is weak, and varying from 100 to 140 strokes in a minute. In a few cases, some slight affection or inflammation of the fauces is perceived.

About the second or third day the eruption appears on the skin, which seldom produces, however, any remission of the fever. It is perceived first about the face and neck in the form of innumerable red points, which in twenty-four hours cover the whole body. On the limbs, particularly about the fingers, there is a diffuse and continuous efflorescence; but on the trunk of the body the rash is distributed in irregular patches. The colour of the eruption is a bright scarlet, being usually most distinct about the loins and bendings of the joints. In consequence of the great determination of the blood to the papillæ and glands of the skin, the surface is often rough, and there is an appearance of papillæ of the skin, or even minute vesicles, as in miliary fever. The efflorescence spreads over the surface of the mouth and fauces, and the papillæ of the tongue extend their scarlet points through a white fur, affording one of the simplest diagnostics of the disease. The face is frequently swelled about the third day. On the departure of the eruption, which usually continues out only for three or four days, a gentle sweat comes on, the fever subsides, the cuticle or scarf-skin falls off in scales, and the patient gradually regains his former strength and health. Such is the disease in its mildest aspect.

In scarlatina anginosa the patient is seized not only with a coldness and shivering, but likewise with great languor, debility, and sickness, succeeded by heat, nausea, vomiting, soreness of the throat, inflammation and superficial ulceration of the tonsils, uvula, and velum pendulum palati, a frequent and laborious breathing, and a quick, small, and depressed pulse. When the efflorescence appears, it brings no relief; on the contrary, the symptoms are much aggravated, and fresh ones arise.

In the progress of the disease one universal redness, unattended, however, by any pustular eruption, pervades the face, body, and limbs, which parts appear somewhat swollen. The eyes and nostrils partake likewise more or less of the redness; and in proportion as the former have an inflamed appearance, so does the tendency to delirium prevail. There is, moreover, an acrid discharge from the nostrils, which excoriates whatever part it falls upon.

On the first attack of scarlatina anginosa, the tonsils and uvula are much inflamed, but the inflammation is soon succeeded by patches of opaque mucus, or by dark-coloured sloughs, from three to five lines in diameter, which sometimes conceal beneath them spreading ulcers. These occasion the breath to be highly fetid. The patient is often cut off in a few days.

Even if he recovers, it will be by slow degrees. In some instances, swellings of the submaxillary, parotid, or of the lymphatic glands, arise, and prove troublesome and tedious in suppurating.

The malignant form of the disease is characterised by the following appearances: its symptoms, on the first day, are nearly the same as in the scarlatina anginosa; but some of the following peculiarities are afterwards observable. The pulse is small, indistinct, and irregular; and the tongue, teeth, and lips, are covered with brown or black incrustation, as in typhus. There is a dull redness of the eyes, with a dark-red flushing of the cheeks, deafness, delirium, or coma. The breath is extremely fetid; the respiration rattling and laborious, occasioned partly by a viscid phlegm clogging the fauces; the deglutition is difficult and painful; and there is a fulness and livid colour of the neck, with a retraction of the head. Ulcerations are to be observed on the tonsils and adjoining parts, covered with dark sloughs, and surrounded by a livid base; and the tongue is often so tender as to be excoriated by the slightest touch. An acrid discharge flows from the nostrils, causing soreness, or chaps, nay even blisters, about the nose and lips; the fluid discharged being at first thin, but afterwards thick and yellowish. The rash is usually faint, excepting in a few irregular patches; and all of it presently changes to a dark, or livid red colour. It appears late, is very uncertain in its duration, and often intermixed with petechiæ. In some instances the rash disappears suddenly a few hours after it is formed, and comes out again at uncertain intervals. In an advanced stage of the disease, where petechiæ and other symptoms characteristic of putrescency are present, hæmorrhages frequently break forth from the mouth and nose. Continual coma, extreme difficulty of respiration, copious diarrhœa, and the formation of numerous petechiæ, prognosticate speedy dissolution, which often takes place suddenly, on the second, third, or fourth day.

The small number of patients who survive these first formidable symptoms, have now to contend with the consequences of inflammatory action in the air passages and digestive organs, which continues after the exanthema is gone. Gangrenous eschars often form over the trochanters and sacrum, which are followed by extensive ulcerated surfaces, whose cure, as it is difficult, prolongs still farther the period of convalescence.

Dr. R. Williams, quoting Bretonneau, says, "The danger of the disease is not proportioned to the intensity of the inflammation of the throat, for I have seen it fatal in eighteen hours after the invasion, and without any redness or swelling of the throat being apparent; and also, when the inflammation of the throat was most intense, this symptom had little influence on the issue of the disease." Dr. Sims, as cited by the same author, remarks, "that on the fourth or fifth day, in some even sooner, great desipientia began to appear; this never rose to delirium, but appeared like fatuity, their eyes having a silly vacant stare, and their words having scarcely any meaning;" their pulse being at the same time very quick, unequal, and weak, and in many not to be perceived. Their extremities had lost their feverish heat, though far from cold, and their whole skin assumed a very remarkable appearance, which resembled nothing so much as that of a dead body which has been kept several days. They had little purging, but every thing they passed in that way was mostly without their knowledge, as was their urinary discharge. A few of them had their throat loaded with an enormous quantity of viscid phlegm, which raised a rattling kind of cough, without any attempt to spit it up; but far the greater number had lost the morbid appearances of the throat. This stage lasted but a short time, the patients mostly dying in twenty-four or thirty-six hours after it began. We quote this last description because we have witnessed a similar case, in which there was this depression without blackness of the tongue, and without any acute symptoms to account for the rapidly fatal result.

When scarlet fever is very mild, and attended only by slight inflammation in the throat, little more will be requisite than to keep the apartment clean and open; to enforce a light diet without animal food; to direct cooling acidulated liquors for common drink, and to administer gentle medicines suitable to the symptoms that present themselves.

In more severe cases, where the skin is very hot and dry, the pulse much accelerated, the head very painful, and advice is called for at the onset of the disease, the best step we can adopt, is to have recourse to affusion, or immersion in cold water, as the speediest and most effectual relief will be obtained by it. In private practice, where there often arises much difficulty in subduing prejudices, and we are prevented from making use of cold affusion or immersion, we must be content to substitute simple ablution pretty generally over the whole body with a sponge dipped in equal quantities of cold water and vinegar.

Dr. Currie mentions, in his "Medical Reports," that he found the affusion of cold water to extinguish incipient scarlatina in repeated instances, so as to prevent either efflorescence or any affection of the throat from taking place. He says, "The plan that I follow, if called in at this early period, where the patient feels steadily hot, the shivering having gone off, is to strip him quite naked, and dash four or five gallons of the coldest water over his body; the heat returning, it is sometimes necessary to use the affusion ten or twelve times in twenty-four hours." During this time, he says, cold water and lemonade should be used as drinks, and the bowels opened, if necessary, by the submuriate of mercury. In a few cases he has thought it advisable to assist the affusion by the diaphoretic power of a solution of tartarised antimony. He adds, that in upwards of 150 cases he uniformly followed the practice here detailed, and with a degree of success so nearly invariable, that he could not contemplate it without emotions of surprise as well as satisfaction.

We are also informed by Dr. Mosman*, that during the hot stage of scarlatina he has seen the most happy effects derived from sponging the body over with cold vinegar and water, and from allowing a free current of air through the patient's chamber. He very properly cautions us, however, against such a practice when the least chilliness prevails, or where there is a tendency to perspiration. In such cases, tepid water and vinegar may be substituted.

The experience which I have had, not only of the perfect safety, but likewise of the utility, of both affusion and ablution with cold water at the onset of scarlatina, where there is great heat and dryness of the skin, with considerable febrile anxiety, and a rapid pulse, induces me to regard these remedies as means very likely to afford decided relief, and under such circumstances to recommend their being more generally adopted than they are. In an advanced stage of the disease, tepid ablution will certainly be preferable.

Dr. Currie† has himself indicated the danger of an indiscriminate use of the cold affusion, of which he was the great advocate under appropriate circumstances only. "It has come to my knowledge," he says, "that in two cases of scarlatina of the most malignant nature, the patients have been taken out of bed under the low delirium, with the skin cool and moist, and the pulse scarcely perceptible; in this state, supported by the attendants, several gallons of perfectly cold water were madly poured over them, under the supposed authority of this work. I need scarcely say, that the effects were immediately fatal." Of late years, says Dr. R. Williams, cold affusion has been rarely used, but in its stead, a partial ablution of the face and hands with cold or tepid vinegar and water has been substituted, a practice grateful to the patient, though perhaps it little influences the course of the disease.

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* See Dr. Duncan's Annals of Medicine for 1790, Article xii.

† Medical Reports, ii. 76.

On the first coming on of both scarlatina mitis and scarlatina anginosa, it has been usual to administer an emetic of ipecacuanha, for the purpose of dislodging any mucus that may have accumulated in the throat. The remedy, however, is violent, in many cases unnecessary; and where there is a tendency to cerebral affection, we think it objectionable; so that it should not be a universal rule of practice to administer it.

After vomiting, or without it, it will be proper to dislodge all feculent matter from the bowels by means of some gentle aperient*; and during the remainder of the disease, if costiveness arises, it must be obviated by laxative clysters, administered from time to time, as the occasion may require. These, as inducing no debility, will be far preferable to purgatives, when the disease has made some progress. Purgatives ought indeed carefully to be avoided, except on the first onset of scarlatina; and even then, whatever we employ should be of the mildest nature, lest we should induce diarrhœa, which is apt to occur of itself.

Bleeding from the system will not be necessary in scarlatina mitis, even although a slight inflammatory diathesis may seem to prevail on its attack. In those cases of scarlatina anginosa where the tonsils are so much inflamed and swelled as to impede deglutition, or considerably interfere with respiration, it will be much safer to apply a few leeches under each ear, or to the throat, and draw blood in this way from the neighbourhood of the parts immediately affected, than from the system of venesection. They generally produce a free flow of blood in consequence of the excited state of the cuticular circulation. Where the eyes look red and fiery, and a high degree of delirium prevails in scarlatina, the application of two or three leeches to each temple may be resorted to with safety, and possibly with some relief.

To determine gently to the surface of the body, it may be advisable to give the saline medicine from time to time, blended with small doses of some antimonial.*

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* ℞ Hydrargyri Chlorid. gr. iij.
Pulv. Rhei, vel Jalapæ, gr. vj.—xij.
M.
Ft. pulvis aperiens, ex melle sumendus.

* Take Calomel, three grains.
Powdered Rhubarb, or Jalap, from six to twelve grains.
Mix them in a little honey.

Throughout the whole course of the disease, if there is either inflammation or ulceration in the throat, it will be proper to make frequent use of some detergent gargle; which in young children may be thrown into the fauces with a syringe, as they seldom can be prevailed on to gargle; this, however, is not always easily effected without such a contest as is injurious to the patient, and distressing to the parents; so that on the whole it is better to get the child to suck a little honey, or honey of borax, either alone or thinned and softened with a little water. As gargles, the infus. of roses, or decoction of bark, with ten drops of dilute sulphuric acid, or five of hydrochloric to each ounce, with the addition of a little sugar, will serve as well as any. A weak infusion of Cayenne pepper has sometimes been found useful.

Blisters have been employed by some practitioners in those cases where the deglutition is difficult, the head much affected, or a high degree of delirium has arisen; but they have too frequently been observed to prove detrimental, by rather increasing the irritation of the patient. Immersing the feet and legs in warm water might probably be attended with a good effect. When blisters are applied under a tendency to putrefaction, they are apt to become gangrenous. In scarlatina maligna they never, therefore, should be used. A bread and water poultice may sometimes be applied with advantage to the throat.

To obviate inquietude and restlessness, opiates are sometimes resorted to; but where the head is much affected, or there is delirium, they would prove injurious. Æther, and the spiritus ætheris compositus, or Hoffman's liquor, would be more suitable remedies on such occasions.

In those cases of scarlatina which show a disposition to malignancy or putrescency, it will be advisable to give the bark of cinchona in substance, decoction, or infusion (as shall be found to sit easiest on the patient's stomach), along with the mineral acids (particularly the muriatic), wine, and other antiseptics, from the first commencement of the disorder. — See TYPHUS GRAVIOR.

As an antiseptic, carbonic acid gas has sometimes been used in this species of the disease with advantage. The best way of giving it is by administering the neutralised medicine in such a manner as that the evolution of the gas may wholly take place in the stomach, which is to be done by the patient's taking the potassæ carbonas and lemon-juice in separate draughts immediately after each other.

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* ℞ Haust. Salin.
Mistur. Camphoræ, āā f. ʒvj.

Antimon. Tartarizat. gr. $\frac{1}{12}$.

Syrup. Cort. Aurant. f. ʒj. M.
Ft. haustus, quartis horis sumendus.

* Take Saline Draught,
Camphor Mixture, of each, six drachms.
Tartarized Antimony, twelfth of a grain.
Syrup of Orange-peel, one drachm.
Mix them as a draught, to be taken every four hours.

It may not be improper to mention, that camphor is a medicine much employed in scarlatina, and often with a seeming good effect; but more particularly in those cases where the pulse is very low, or the efflorescence disappears suddenly. In these instances, ammonia, the aromatic confection, warm bathing, and wine, will likewise be advisable.

A solution of the sesquicarbonate of ammonia, in the proportion of two scruples to five ounces of water, of which two teaspoonfuls are to be taken every two, three, or four hours, according to the urgency of the symptoms, is another remedy which has been found highly beneficial in this disease.[*]

My usual plan of proceeding in both scarlatina anginosa and scarlatina maligna is, to give a decoction of the bark of cinchona, with an equal quantity of wine and a few drops of chlorine water; and in two or three hours afterwards the draught[†] of camphor and ammonia, and so on alternately; which mode of proceeding I have found to be very successful.

If a purging arises in scarlatina anginosa, it ought to be suppressed as soon as possible, by astringents joined with aromatics, opium, and wine.—See DIARRHŒA.

Quinine is a medicine well deserving a trial in the adynamic or malignant form of scarlet fever; Dr. R. Williams considers the compound infusion of roses a good vehicle for its exhibition, five grains being dissolved as a dose in an ounce and a half of that vehicle. We think that the addition of five drops of tincture of opium to this draught would be advisable, in order to diminish the risk of purging, and to cause it to sit better on the stomach. This would be a proper draught for an adult, a third or sixth of which might be given to a child, according to its age; if, indeed, so bitter a medicine could be got down, even when sweetened. We have sometimes found it less difficult to administer the decoction with a little tincture of bark, made less unpalatable by sugar, and we think that its astringency gives it some advantages. Wine must be given in these cases, instead of, as advised by Dr. Williams, or together with, the tonic, and beef-tea freely administered also.

[*] See Dr. Peart's Treatise on the Malignant Scarlet Fever and Sore Throat.

[†] ℞ Camphoræ, gr. v. Solve in
Spirit. Rectif. f. ʒss. et adde
Aq. Puræ,
—— Cinnam. āā f. ʒv.
Ammoniæ Sesquicarbonat. gr. v.
Syrup. Cort. Aurant f. ʒj.
Ft. haustus, 4tis horis capiendus.

[†] Take Camphor, five grains. Dissolve it in
Rectified Spirit, half a drachm; then add Pure Water,
Cinnamon Water, of each, five drachms.
Sesquicarbonate of Ammonia, five grains.
Syrup of Orange-peel, one drachm.
Mix them, and let this draught be taken every four hours.

In some few cases of scarlatina, the extension of inflammation from the throat to the glottis and larynx, produces a croupy respiration and cough, which render the patient's condition more hopeless, if possible, than before. In others, the occurrence of mortification in the angle of the mouth or cheek, spreading over the face, may terminate the existence of such as have struggled through the acute stage of the disease. Or bed sores, about the sacrum or hips, may greatly protract the convalescence, or exhaust the remaining strength. Deafness, proceeding from an inflammatory condition of the membrane of the Eustachian tubes and internal ear, is by no means uncommon. This may continue for years, and then disappear by the efforts of nature alone. The recovery, in such cases, is to be looked for especially about the period of puberty. In rarer instances, the membrana tympani may be destroyed, and the little bones of hearing perish or be removed, causing permanent deafness on the affected side; and again, if the bony case of the organ of hearing become carious, we may have, as noticed by Dr. Abercromby, a propagation of disease to the membrane of the brain, with formation of matter within the skull, and death at a considerable but uncertain interval after the termination of the primary disease. Enlargement and induration of the glands of the neck are no uncommon consequences; and abscesses may form in or near them, or in other parts, which long harass the sufferer, or may even bring him to the grave. There is sometimes, though rarely, a persistent inflammatory condition of the skin after the cessation of the eruption. The surface feels harsh, and hard, and dry, and there is a tendency to its cracking at the flexures of the joints, with the formation of deep sores, which may implicate the vessels and produce death by hæmorrhage. We remember to have seen one such instance, where a large cleft was thus formed in the groin over the hip-joint, attended with a fatal result. Another of the many evils in the train of scarlet fever is an affection of the joints, which in our own experience has been mild and manageable, but is said, at times, to have produced suppuration within them leading to a fatal result. We are disposed to regard this as peculiar to particular epidemics, rather than a general sequela of scarlet fever.

But of all the multifarious mischiefs which follow this disease, dropsy is by far the most frequent. It is wont to succeed a mild and sthenic, rather than an adynamic or malignant, form of the complaint. When present, it always affects the surface; but the effusion of fluid may at the same time take place in the cavity of the abdomen or chest, or in both together. It is, in the majority of instances, as we are convinced by experience, of an inflammatory character; and often accompanied by the excretion of albuminous urine. Not uncommonly, also, there is a sub-inflammatory condition of the lungs or pleura. It is best treated by free purging with calomel and jalap, or calomel and scammony, together with antimony and small doses of digitalis in saline medicines. This treatment will generally effect a cure without the aid of venesection; yet we should often have recourse to this last but for the difficulty of performing it in young subjects; and we consider leeching or cupping very inadequate substitutes in these cases. The warm bath may be advantageously employed in addition to these remedies.

The condition of the kidney which attends scarlet fever, and the subsequent dropsy, is not that of fatty degeneration, but rather a consequence of subacute inflammation, which has been characterised as desquamative inflammation, and is accompanied with albuminous urine. There is every reason to believe that this affection of the kidney is a curable disease; yet, if neglected, it may lead to continually increasing degeneration in that organ. It is a point, therefore, to be attended to in the treatment of this disease, that diaphoretic remedies should be continued, and stimulants be altogether withheld, not only till the dropsy has disappeared, but till the albumen is no longer found in the urine. We may then, but not till then, reckon our treatment of the disorder complete, and proceed to strengthen the system, if necessary.

To prevent the spreading of scarlet fever, it is absolutely necessary to separate the sick from all who are liable to the attacks of the disorder; and this measure will be of little avail unless the suspected, and those who have had the closest intercourse with the sick before the disease had distinctly manifested itself, be separated also. If the period of latency is limited, as we have said, to ten days, that term of insulation will be sufficient for the prevention of danger from the latter class: those attacked must be kept apart for a longer period, not less, we think, than three weeks or a month, in order to make our precautions effectual. They too, who are in attendance upon or are visitors of the sick, must take every care to prevent being the means of conveying the disease to the unaffected. If all these measures be promptly and rigidly adopted, which they seldom are or can be, we may hope to stop the progress of the disease, either in families, or schools, or other establishments where children are collected in large numbers; but not otherwise. Other preventive measures are directed to acting on the constitution of such as we cannot secure from all risk of infection, by such medicines as may render them less liable to the disease, or less liable to suffer from it severely. It has been asserted of belladonna, that it has a specific protective power; and though the evidence in its favour may not be conclusive, it is such, nevertheless, as to make us recommend the trial of a treatment attended with no risk and little trouble. Dr. Burrows tells us that the proposed manner of using this prophylactic is by dissolving three grains of the extract in an ounce of water, and giving three drops of this solution twice a day to a child under twelve months, and one drop more for each additional year of age. There is no reason why Dr. Sims' recommendation, to administer a few grains of rhubarb every morning, so as to produce one laxative motion in the day, should not at the same time be adopted.

PESTIS, OR THE PLAGUE.

The plague is a very malignant fever, of a putrid and contagious nature, in the progress of which, extreme debility, buboes, carbuncles, petechiæ, hæmorrhages, colliquative diarrhœa, and such other symptoms arise. The contagion of the plague is of a specific nature, giving rise to febrile symptoms, and particularly affecting the nervous and glandular system.

The question of the liability of those who have suffered one attack of plague to be again affected, is one of so much interest in relation to the history of the disease, and of so much practical importance as regards precautionary measures connected with it, that we think it best to cite the high authorities which have convinced us that in this respect it resembles the other exanthemata. Dr. Russell, in his "Treatise on the Plague," after pointing out the distinction necessary to be made between cases of relapse and those of re-infection, writes as follows at p. 190.: —

"It appears, from my journals and memoranda, that in four thousand four hundred pestilential cases I met only with twenty-eight of re-infection, well ascertained; a proportion much under what I expected, and which may account for some practitioners not having met with them at all. I had occasion to see none myself who suffered more than two attacks, but have been credibly informed of persons having suffered three, and even four. Re-infections were always regarded as remarkably uncommon, but such repeated attacks as very extraordinary; and I suspected that accessory eruptions in a late stage of the disease were sometimes mistaken for the signs of recent infection."

The learned Dr. Copland, the most recent writer on this subject, in section 103. of his article on Septic or Glandular Pestilence, says that subsequent researches have fully confirmed the important fact established by Dr. Russell, that a second attack of plague is of much rarer occurrence than a second attack of small-pox. Dr. White, at p. 151. of his "Treatise on the Plague," states that no instance of re-infection was known to him as having occurred among any of the convalescents from the plague of Corfu, in 1815, although several of them volunteered their services as expurgators, and were continually exposed to the influence of contagion. He considers this non-liability to re-infection to be almost universally admitted; and Dr. Williams argues in favour of the same fact.

Sir James M'Gregor, in his "Medical Sketches of the Expedition from India to Egypt," notices, that the plague is subject to considerable varieties in different seasons and circumstances. In the Indian army, he observed, that when the disease first broke out, the cases sent from the crowded hospitals of the 61st and 88th regiments were, from the commencement, attended with typhoid or low symptoms. Those which were sent from the Bengal volunteer battalion, and from the other corps, when the army was encamped near the marshy ground at El-Hammed, were all of the intermittent and remittent type. The cases which occurred in the cold rainy months of December and January had much of the inflammatory diathesis: and in the end of the season, at Cairo, Ghiza, Boulac, and on crossing the Isthmus of Suez, the disease wore the form of a mild continued fever.

The appearances of the plague have been arranged by different authors in different ways. The French writers on the subject have specified five varieties: Dr. Russell has extended them to six; but the arrangement of Sir Arthur Brooke Faulkner, drawn from extensive observation during the late appearance of that complaint in the island of Malta, which admits only of three species, appears to be the most judicious; and this I shall therefore adopt. The propriety of distinguishing the plague into three species is also sanctioned in a small tract from the pen of Dr. Pearson.

The plague is by most writers considered as the consequence of pestilential contagion, which is propagated from one person to another by association, or by coming near infected materials. But as this position has been denied by many, including a few of rank or eminence in the medical profession, it becomes necessary briefly to set forth some of the evidences on which it rests, in order as far as possible to win men to co-operate with one mind, and with all zeal and energy, in suggesting, adopting, and carrying out those preventive measures, which may ward off an enemy little amenable to human power and medical skill when once its victims are within its grasp.

Our argument will here be taken up on a large scale, and we shall endeavour to show, 1st, that several of the great plagues which have devastated particular towns or districts have arisen shortly subsequent to the arrival of infected vessels or persons; 2dly, that in several instances the extension of plague has been traced to the introduction of infected clothes or other articles; and, 3dly, that in the midst of an epidemic prevalence of the disease, immunity has repeatedly been secured to those who have entirely separated themselves from the sick and suspected, avoiding their abodes, and excluding all traffic and intercourse with them.

First, then, we have undertaken to show that in many instances the epidemic appearance of plague was speedily consequent upon the arrival of infected ships or persons in the places where it broke out. A vessel from Seyde, in Syria, arrived in Marseilles on the 25th of May, 1720, after having lost several of the crew and passengers during the voyage by this distemper. Two days after the arrival of this ship, one of the sailors died; on the 12th of June, an officer of quarantine who had been put on board died also, and this was followed by the death of a cabin boy on the 23rd. About the same time some porters employed in opening the merchandize in the lazaretto, were taken ill and died; in the first week of July, three others fell sick in like manner, but in these, buboes were discovered in the axilla and groins. A consultation of surgeons being held, it was declared that these patients had the plague. This was on the 8th of July, and all three died next day. The priest who administered to the sick, and the surgeon of the lazaretto, with part of his family, were infected also and died. Three other ships arrived, after the first, from the Levant, in the end of May and in June, with foul patents; yet the passengers from all the four ships were, together with their baggage, admitted into the city, after performing a quarantine of little more than eighteen days. The distemper discovered itself in the city about the 20th of June, but cases were rare till the 1st of July. From the 12th to the 23rd there was a deceitful pause. From the latter date the plague spread in different places, and by the end of July had got into the suburbs; and after the first week of August it increased rapidly, and universal dismay soon succeeded.* The plague had been unknown there for seventy years previously.

"In the month of April, 1759, a large Turkish vessel, laden at Alexandria, and bound for Constantinople, was wrecked in her passage not far from Cape Baffo in Cyprus. Of the crew who were saved, a great part happened to be infected with the plague; which was first communicated to certain villages on the road to Limsol, and subsequently to that town itself."†

The first appearance of the plague at Aleppo, which continued for three years, was preceded in May, 1760, by the arrival of caravans from Jerusalem, Damascus, and Latakea, where the disease was raging; and several persons belonging to them were said to be actually infected.‡

The arrival of two soldiers from Choczin, where the plague was raging, at the military hospital of Moscow, where they soon after died, in November, 1770, and the subsequent appearance of the disease among numerous inhabitants of the building in that and the following month, formed the preface of that fearful visitation, which, though somewhat arrested by the intense cold, resumed its course in March, 1771, and destroyed 80,000 persons in Moscow alone.§

On the 29th of March, 1813, according to Dr. Calvert, a vessel called the San Nicolo, arrived at Malta from Alexandria, where the plague was raging at the time of its departure. Two men died on the voyage. The captain sickened on the 1st of April, and died on the 3rd, and his servant perished about the same time, exhibiting symptoms of plague as well as his master. The first case of plague in the city of Malta, was in a child, first seen on the 19th of April, which must have sickened on the 12th or 13th, as it had been five days ill. The mother of this child sickened on the 1st of May, miscarried on the 3rd, and died before the following morning, with a bubo in each groin. Between the 21st and 31st one hundred persons were attacked, of whom eighty died, and the plague then became generally diffused. The disease had been unknown for 130 years before.‖

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* Russell on Plague, pp. 210, 211. 213. † Ibid. p. 3. ‡ Ibid. p. 16.

§ Copland's Dict., iii. 202, 203. ‖ See Medico-Chirurgical Transactions, vol. vi.

At Corfu, in 1815, after an immunity from plague during five years, the disease made its appearance, and extended over the district of Lefchimo. It was ascertained by Dr. White that a smuggling vessel from the opposite coast of Albania, where plague was at the time rife, had, shortly prior to the outbreak, disembarked her cargo at a magazine at Casa Politi, within this very district.*

Dr. Babington, as quoted by Dr. Copland, mentions that when he was at Milo, in 1815, a vessel came into port, having one person on board ill with the plague. The vessel was ordered by the Greek authorities to quit the harbour. She put into Mitylene, where those in authority were less cautious, and allowed the sailors to land, several of whom had by this time become infected. The distemper immediately afterwards broke out among the islanders, where several fell victims to it.†

In June, 1841, when Constantinople and its neighbourhood were free from plague, and had been free for three years, a vessel arrived from Egypt with cases of the disease on board, which, with the whole of the crew and passengers, and their effects and merchandize, were disembarked, and placed in quarantine in the lazaretto. Of the guardianos and porters employed in this service, two contracted the disease; one died, and one recovered. A monk also, and the son and daughter of the keeper of the lazaretto, contracted the disease, the last two fatally, and then the plague ceased.‡

These cases of imported plague are the same which have been discussed by Dr. J. Davy, in the 72d vol. of the "Edinburgh Med. and Surgical Journal," and which he considers instantiæ crucis, and demonstratively in proof that the plague may be propagated by contagion.§

A similar occurrence at Malta, in May of the same year, is recorded by Dr. Gravagna; and another parallel case, observed in the same island in 1821, is referred to by him. In neither of these instances did the disease extend beyond the lazaretto.‖

Dr. Grassi gives a table which shows that from 1831 to 1837, the plague has ten times reached the port of Alexandria from without; that it has been eight times combated and subdued in the lazaretto; and that in the two instances in which it penetrated into Egypt, the cause was the non-adoption of similar regulations.¶

"Every time," writes Dr. R. Williams, "the plague has appeared in Christian Europe, the arrival of a ship, on board which one or more persons have died of the plague, has been an invariable antecedent. The disease has also, in every instance, invariably first broken out at the port or town at which such vessel has arrived, and if the proper precautions have been taken, has either not spread, or only in a trifling degree, in the interior."**

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* White on Plague, 155, 156.

† Dictionary, iii. 218.

‡ Medico-Chirurgical Transactions, xxv. 169, 170.

§ P. 23.

‖ British and Foreign Medical Review, xvi. 293.

¶ Ibid. xix. 45.

** Morbid Poisons, ii. 279.

It has not been our purpose, nor would space allow us, to go into details, and to trace out the order of sequences in any of these cases, or to enter upon any speculation concerning them. We merely adduce numerous well-attested examples, in which the arrival of ships and persons infected with plague in districts believed to be at the time free from it, was shortly followed by the appearance of this disorder among those previously intact. We point out a frequent definite coincidence, or correspondence between two occurrences, and we ask if it be possible to conceive that there should be no other than an accidental relation between them?

We proceed to quote a few examples of the conveyance of plague by means of clothes or other articles, in proof of its propagation *per fomitem*, as it has been termed; and we must here remark, that no amount of negative evidence can set aside the inference to be drawn from even a few well-established facts. "I have already mentioned," says Dr. Russell*, "the plague at Aleppo being conveyed into different streets, remote from one another, by the Jewish salesmen; and I have known several instances in the spring, of Armenian washerwomen infected by tainted linen."

The plague of Messina in 1743, broke out shortly after the arrival there of a Genoese vessel, on the 20th of March in that year, on board of which one or two sailors had died of plague during the voyage; and we are told by a contemporary resident there that to all human appearance the infection would never have been introduced into the city had it not been for a fisherman, who afterwards, on his death-bed, disclosed the fatal secret, that he had, soon after the ship's arrival, received some bales of tobacco covered with canvas, and some pieces of linen, which he carried by stealth to his own house, in a part of the city called Pizzilari, where the distemper in effect first appeared.†

In writing of the plague of Marseilles, the same author says, that some porters employed in opening the merchandize in the lazaretto were taken ill and died.‡

Dr. White, in his "Treatise on the Plague," in speaking of that of Lefchimo, says, "It was ascertained through the diligence of Assistant-Surgeon Gemmellaro, of De Rolle's regiment, serving under my orders, that some cases or bales of goods of some kind had been secretly landed from the vessel, and carried up to that particular house (the Casa Politi); that soon after they were opened the family and servants began to fall sick, and some of them to die suddenly."§

Again he states, "It was currently reported in the district, and also generally believed, that among the smuggled goods which were sent for sale to the village of Marathea, there was a parcel of red caps, articles which the Greeks are accustomed to wear, and it was after these caps had been sold in Marathea that he disease appeared there; and to these caps was the introduction f the disease there attributed."*

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* Treatise on Plague, p. 299.

† Ibid. p. 327, *note*.

‡ Ibid. p. 211.

§ P. 156.

In the 19th vol. of the "British and Foreign Medical Review," t p. 45., we find the following quotation from Dr. M'Carthy's eport, p. 423. "An Armenian banker quitted precipitately his untry seat on the Bosporus (it was in July), in consequence of ı accident of plague among his domestics. Every thing was to- rably well purified in the ordinary manner, with the exception of ouple of trunks containing fur, shawls, and other valuables. In e following spring the proprietor commissioned some trustworthy rvants to open the trunks with precaution, and air the contents; o of the number were attacked, and died of plague, though at e same time the public health was unexceptionable."

Dr. Gaetani adduces †, in proof of the transmission of the pes- ence by clothes, the fact that there existed at Rosetta a maga- ne of effects belonging to plague patients. The magazine was ened after two years, and three persons were seized with the dis- nper, although the town was in a most salubrious state.

Dr. White, at p. 91. of his work, already quoted, calls attention the fact, that a person may appear to be in perfect health, and t have the plague in his constitution, or in his clothes, without being known even to himself; and he describes how one of the eek papas, named Metaxa, belonging to Anaplades, soon after breaking out of the malady in Marathea, went to that village assist at a congregation of the clergy there, for burying the dead, l offering prayers to heaven on the melancholy occasion. A few s after his return home, his family began to fall sick, and in a days more six out of the eight individuals of whom it con- ted, were either dead or dying; he himself was the last attacked, l probably the only one of the eight that recovered. It was in manner that the disorder was first introduced into Anaplades, l soon spread over the village; the result affording an important on to medical and other attendants on the sick, of the necessity guarding against becoming themselves the instruments of dif- ng the disease.

These facts seem sufficiently to indicate the possibility of the nmunication of plague by the personal effects of those who have fered from the disease, by their clothes, bedding, and furniture, perhaps by merchandize generally, if exposed to the same uvia. It appears, however, that these last have seldom, if ever, n the means of conveying it; and more especially with regard otton imported in immense quantities from Egypt, it is stated, he result of inquiries made in the different lazarettos of Europe, t not a single person of all those employed in opening and airing bales has ever been known to have been infected.‡

Ve know not how far, but we think that in some degree at least, the remarks of Dr. Russell, in explanation of this immunity, as observed long ago, may still be applicable, when he says, at p. 322., that "the unprejudiced examiner, finding precautions abroad as well as at home have never altogether been neglected, may be inclined to ascribe the preservation of England, in some measure at least, to those precautions. At the same time, however, much must be allowed for the absence of that pestilential constitution of the air, without the concurrence of which imported contagion, even in Turkey, does not spread." We shall have hereafter to speak of certain conditions of the surrounding atmosphere, with respect to moisture, temperature, and stillness, as well as the presence of the infecting principle itself, as conducive or even necessary to the effective operation of that principle upon those who are brought into proximity with infected persons or goods. Certain states of health or constitution also render the recipients more or less susceptible or predisposed to imbibe and suffer from the poisonous influences which may act on them; but these are circumstances not peculiar to plague, but common to it and all infectious diseases.

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* P. 157.

† Copland, iii. 210.

‡ Medico-Chirurgical Transactions, xxv. 190.

However little weight be allowed to the facts adduced under the preceding heads, as showing the infectious nature of plague, even when their import is made more apparent by contrast with the observations now to be detailed, still the practical inference, the rule of conduct, must be the same if we succeed in proving under our third head that in the midst even of an epidemic prevalence of the disease, immunity has repeatedly been secured to those who have entirely separated themselves from the sick and suspected, by avoiding their abodes, and excluding all traffic and intercourse with them. We can only cite a few of the instances to this effect that crowd upon us; and, first, we read in Russell, at p. 245., the statement of the Bishop of Marseilles, that during the devastation of Marseilles in 1720–21, the plague did not at all penetrate into the religious communities which had no communication with those around them, and which used the necessary precautions to protect themselves against it. The Chevalier de Langeron, the governor, is quoted to the same purpose in the next page, and says, after observing upon the danger of acquiescing in the new doctrine of the non-contagion of plague, "We have remarked, that they who shut themselves up in their houses when healthy, came forth healthy."

The Hôpital de la Charité, of the same city, a sort of poorhouse, which made up three hundred beds, and was much crowded, shut up, and escaped with complete immunity.*

In the plague of Moscow, 1770–71, the Imperial Foundling Hospital, containing about 1400 souls, shut up, and every thing received into the house was passed through vinegar. Four workmen, and about as many soldiers, who had got over the fences at night-time, were the only persons out of this large number attacked, and these being separated immediately, the contagion did not spread, although more than 100,000 persons fell victims to this pestilence in other parts of the city. When the plague broke out in Malta in 1813, the town of Jegla, or Isola, inhabited by some seafaring people, and among them many old Levant traders, shut up; and although the plague was raging at Valetta, at a distance of not more than 360 yards, not one case occurred in Isola.

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* Dr. R. Williams' Elements of Medicine, ii. 282.

The exemption of the convent of St. Augustin, situated in the middle of the town, was equally singular. On the first alarm, the principal of the convent had maintained the utmost caution in communicating with the public. At length one of the servants bought some old clothes in the Mandraggio, and he, and a monk who volunteered to attend him, were attacked and died; but as they were kept in strict quarantine in their respective cells, the disease did not spread to any other individual within the walls.*

At Alexandria, in Egypt, the arsenal shut up, in 1834, containing 6824 persons; and although the city was decimated, only eleven persons of this establishment were attacked.† In the same plague, according to Dr. Grassi, the squadron of 16,000 persons remained perfectly well, and this not on account of removal from the seat of infection, because other ships in the same situation which had communication with the shore lost many men.‡

M. Lacheze, as quoted by Dr. Copland, states "that during the plague at Cairo, in 1835, Mehemet Ali shut himself up in the palace of Schoubra with 300 persons, composing his suite, and surrounded it with a double cordon of troops, and that three persons only were seized with the early symptoms of plague, and they were instantly dismissed. The school of cavalry, containing 515 persons, was placed in quarantine for four months, and lost none of its inmates, although situated in the midst of the town of Gizeh, in which one-third of the inhabitants died.§

During the plague of Smyrna, in 1834, 1835, 1836, and 1837, Dr. Copland tells us, on the authority of Dr. Morpurgo, that a barrack containing 1200 or 1300 troops, situated in the most unhealthy part of the city, where several drains and sewers meander through margins of filth, was kept in the most rigid quarantine, with the result that not an individual was attacked, although the distemper was raging around them, and during their seclusion they had the same food and rations as before and after. ||

It is not, however, contended by the most zealous contagionists, that at all times and under all circumstances the infection of plague is conveyed from those who are suffering to others who are brought into contact or near proximity with them, or have handled or used their clothes, bedding, or effects. It is well known that many have escaped unharmed who have, through necessity, inadvertence, or design, undergone these trials. Yet these occasional negative

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* Dr. R. Williams' Elements of Medicine, ii. 282, 283.

† Ibid. p. 282.

‡ British and Foreign Medical Review, xix. 44.

§ Copland, p. 208.

|| Ibid. p. 209.

results can by no means invalidate the inference to be drawn from the facts above detailed. It were as just to argue that there was no peril from a cannonade because some escaped of those against whom it was directed, as to conclude that no infectious poison exists in plague because it does not show its effects in all who come within its range. Will it be said that hydrophobia is not the result of the bite of a rabid animal, because the majority of those so bitten are never attacked by the disease?

It is generally believed that the disease is both contagious and infectious, and that it is so in every stage of its course, and that even the recent corpses of those who have died of it are capable of communicating it.

In the plagues of Marseilles, of Malta, and of Alexandria, it is distinctly stated that the grave-diggers and the bearers of the dead suffered in a most unusual degree.*

It is supposed, however, that the infectious principle extends only to a short distance, as a few feet around the diseased, in a state of activity. This distance must in all probability vary according to circumstances.

It is well ascertained that a certain temperature of from 60° to 80° Fahrenheit is essential to the epidemic prevalence of plague; whenever it sinks or rises much beyond these limits, the disease declines. Moisture and stillness of the air are believed to operate in condensing the poison; the crowding together within small apartments many infected persons must give it greater strength and concentration. The opposites of all these, as dryness, a free current of air, and the allowance of ample space for the diseased, must impair its power.

Some, however, have doubted whether the disease is really contagious or not, whilst a few have asserted positively that it is not so: an absurd doctrine truly, which, if acted upon by the legislature, would be likely to be attended with the most injurious consequences. The fact that it is evidently contagious, is fully established in Sir James M'Gregor's opinion; but the laws of its transmission are not more accurately known than the specific nature of the contagion.

It is a question of some interest, whether infection is the only instrument in the propagation and perpetuation of plague, or whether any peculiar combination of conditions may be adequate to its generation *de novo*. For arguments on this point, we must refer to those parts of Dr. Copland's and Dr. Williams's able articles on the subject of plague, in which this question is discussed. The former of these authors, though declaring his inability to arrive at a certain conclusion, manifestly leans to the negative side; the latter distinctly says that it seems determined, not only that the plague does originate in Egypt, but that the poison must be generated in that country within a very circumscribed space. We believe that this regeneration is not the subject of positive evidence at all, but is merely an assumption to account for the reappearance of the disease after its seeming extinction; and we conceive this assumption to be no more necessary or justifiable than in the parallel instance of small-pox. Dr. Copland goes so far as to say, that we have no valid evidence that this distemper may be generated *de novo.*

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* Williams, p. 287.

This disease attacks persons of all ages and both sexes indiscriminately; but women, young people, and infants at the breast, have been observed in general to resist infection more than robust men. Those who were exposed to vicissitudes of heat and cold, such as bakers, cooks, and smiths, were noticed, during the campaign in Egypt, to be more particularly attacked by it. The dark races are said to suffer more frequently and more severely than Europeans.

In all epidemic plagues, terror and anxiety, filth and defective nutriment, fatigue and hurry, anger and intemperance of every description, have acted as predisposing and accelerating causes of the distemper.

In some eastern countries the plague is wholly unknown, but more particularly in Persia and Japan. The Egyptians denominate the winter and early part of the spring their season of the plague, which they acknowledge never passes without this disease appearing in some degree. It has also been remarked, that the rise, progress, and abatement of this disease in different years bear a striking resemblance to each other. At its first appearance, which is usually in November, it assumes its most deadly form, and those affected by it sink into the grave almost without complaint. During the winter and beginning of spring it scarcely manifests any diminution of its virulence, but towards the end of the latter, when the weather increases in warmth as the summer approaches, its attacks become less frequent, and its malignant symptoms subside into the appearances of ordinary disease, still, however, retaining the characteristic one of glandular affection. Towards the end of June it is said to disappear.*

The plague is known to be most prevalent in Egypt soon after the inundation of the Nile, or rather its recession: for a quantity of slimy mud being deposited on the banks of the river and other places it has overflowed, occasions humid, mephitic exhalations to arise, which are supposed to produce the disease. From Sir Robert Wilson's account of the diseases of Egypt†, there is great reason to suppose that a humid state of the atmosphere is favourable to the production of the plague; for the English and Turkish armies which marched to Cairo escaped contagion, notwithstanding almost every village was infected; while the troops that remained stationary on the moist shore of Aboukir were severely affected and lost many men. A dry atmosphere appeared to him not only to be a preventive of the plague in some degree, but likewise to act as a remedy; for we are told, that several men confined with this disorder in the hospital at Jaffa, escaped into the Desert, and endeavoured to reach the army, but finding the attempt impracticable, they returned in three days perfectly recovered.

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* See Mr. Webbe's Narrative of Facts relative to the Plague, in vol. vi. p. 118. of the Transactions of the London College of Physicians.

† See his History of the Expedition to Egypt.

Baron Larrey* observes that the plague puts on a more formidable appearance during the continuance of the south winds than during the winds from the north or north-east. When the latter prevailed, its effects were diminished; and if it continued for any time, the disease disappeared altogether. On the return of the south winds (or khamsyn), it appeared again with as much violence as ever. A curious observation made by this gentleman was, that the plague rarely attacked wounded men whose wounds were in a state of plentiful suppuration; but as soon as the wounds were skinned over, a great many were seized, and few escaped death. He observed the same thing among the inhabitants of the country who had issues open. Galen, and many other celebrated writers, have also noticed, that in countries which they have seen ravaged by the plague, it had spared all those who had issues plentifully discharging.

It has been observed that the plague generally appears as early as the fourth or fifth day after infection; but it has not yet been ascertained how long a person who has laboured under the disease is capable of infecting others, nor how long the contagion may lurk in an unfavourable habit without producing the disease, and may yet be communicated, and the disease excited, in habits more susceptible of the infection. It seems certain that the communication of plague may on the one hand follow instantaneously on exposure to its exciting cause, or again that the period of incubation may extend to ten or eleven days between this and the manifestation of its symptoms in the infected individual.

To repeal or abrogate the quarantine laws wholly, because a few misguided men have asserted that the plague is not contagious, would be likely to bring down devastation on this nation, by exposing it to the visitation of a malady the most destructive of any to human life. Yet if the longest period of latency be rightly fixed at eleven days, the duration of quarantine might be shortened without danger.

In the first species of the plague, according to the arrangement of Sir A. Brooke Faulkner, the energy of the brain and nervous system is greatly impaired, as indicated by coma, slow, drawling, or interrupted utterance; the tongue is white, but little loaded with sordes, and usually clean, more or less towards the centre and extremity; the anxiety is great, countenance pale, stomach extremely irritable, and the strength much impaired. Rigors and pain in the lower part of the back are among the early precursors of the other symptoms. This was observed by Sir A. Brooke Faulkner and the other physicians at Malta to be the most fatal species of the plague, and prevailed chiefly at the commencement of the late disaster. Those who were infected sometimes died in the course of a few hours, and with petechiæ.

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* See his Memoirs of Military Surgery.

In the second species the state of the brain is the reverse of what takes place in the former, the symptoms generally denoting a high degree of excitement; the pain in the head is intense, thirst frequently considerable, though sometimes wanting, countenance flushed, and utterance hurried. The attack is ushered in by pain in the back, and rigors, as in the first species. Epistaxis not unfrequently occurs in this. Glandular swellings come out tardily, and after appearing, recede again without any remission of the general symptoms. Carbuncles arise over different parts of the body or extremities, which are rapidly disposed to become gangrenous. The delirium continues extremely high and uninterrupted, and the patient perishes in the course of two or three days. Sometimes he lingers on till the seventh, yet rarely beyond this period without some signs of amendment. Sir A. Brooke Faulkner found the instances in this second species very numerous, and hey were nearly as fatal as the preceding. In the countenances of some of the sick, just previous to the accession of the more violent symptoms, there is an appearance of despair and horror which baffles all description, and can never well be mistaken by hose who have once seen it.

The third species is somewhat akin to the last, only the sympoms are much milder, and the brain is comparatively little affected. The buboes, and other tumours which make their appearance, go on more rapidly and kindly to suppuration; and by a prompt and arly employment of remedies calculated to assist the salutary perations of nature, the patient has a tolerable chance of surviving. Cases of this kind are often so mild, that persons have been known o walk about in seeming good health, and without any evident nconvenience from the buboes.

Such are the characteristic symptoms of this malignant disease, he varieties of which seem to depend in a great measure on the onstitution or state of the air at the period of the epidemic prevailing, and on the habit of body of the patient at the time of the ttack.

In no disease do patients bear motion worse than in this. The ast movement has been known to induce syncope, and even death, articularly in the last stage of the complaint.

The plague is always to be considered as attended with immient danger; and when it prevailed in this country, above two undred years ago, proved fatal to most of those who were atcked with it. It is probable, however, that many of them died rom want of care and proper nourishment, the infected being orsaken by their nearest friends; because in Turkey, and other countries where attention is paid to the sick, a great many recover. Of the French army that invaded Egypt, little more, however, than one-third of all that were attacked with the plague recovered; as appears by the report made by Dr. Desgenettes*, who was chief physician to that army.

The duration of the disease is various. In some instances the effect of the pestilential contagion is the immediate extinction of life; and cases have occurred wherein the patient has survived but a few hours the first sensation of illness. In other instances, again, he has lived till the thirteenth, and even the seventeenth day of the disease.

Where the plague is ushered in by fever and delirium, it is seldom that the patient recovers: in spite of every endeavour, he is generally deprived of life within forty-eight hours, or on the third day at furthest. If the fever does not occur until the second day from the attack of the disease, there is less danger, as time is thereby given to obviate the consequent symptoms.

When the plague is unattended by buboes, it runs its course more rapidly, and is more generally fatal, that when accompanied by such inflammations. The earlier they appear, the milder usually is the disease. When they proceed kindly to suppuration, they usually prove critical, and ensure the patient's recovery. Sudden death has, however, been known to happen even when the violence of the constitutional disturbance appeared to have been subdued, — when buboes have made their appearance, were suppurating, and the patient considered convalescent. It is generally a favourable sign when the bubo does not adhere, but shakes on its base. A gentle diaphoresis, arising spontaneously, has been known in many instances to prove critical. When carbuncles show a disposition to become gangrenous, the event will be fatal. Furuncles, petechiæ, hæmorrhages, severe vomiting, and a colliquative diarrhœa, denote the same termination.

The worst forms of the disease are always accompanied with the usual symptoms of putridity and malignity; and such rarely terminate favourably. It has been remarked, that if a patient, after an access of delirium, was suddenly restored to his senses, he seldom recovered. Most cases terminate fatally wherein the patient is comatose from the beginning. The typho-mania may be regarded as a more fatal form of delirium than the inflammatory.

In the bodies of those who die of plague, the surface is often bluish and dark violet, in large irregular patches, especially about the head, neck, and upper extremities; this appearance, however, is often absent, but is frequently accompanied by petechiæ; and carbuncles and buboes are also observed. The usual cadaveric stiffness is observed. There is evidence of congestion of the membranes and substance of the brain, with dark blood, and sometimes there are sanguineous effusions, but more generally increase of the serous secretion.

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* See his Histoire Médicale de l'Armée de l'Orient.

The lungs are always posteriorly of a deep violet, their vessels being gorged with thick and dark blood. Effusion of serum is met with in the pleural and pericardiac cavities; the heart appears increased in volume with gorging of its superficial vessels. The right side is found distended, the left empty, or nearly so; the veins distended with black blood, the arteries contain little or none.

The peritoneum is always of a pink or bright red tinge, and the vessels beneath are gorged with black blood. The stomach often contains gas, and a quantity of a dark, viscid fluid; its mucous membrane varies in colour from pink and bright red to a brown, bluish, leaden, or green tinge, while patches of ecchymosed blood, or sometimes ulcers, are observed in it, and it is besides found remarkably softened. The mesenteric glands are enlarged and blackish, and the whole glandular system more or less altered. The liver and spleen are enlarged and softened, especially the latter, and the gall-bladder is greatly distended. The kidneys, too, are gorged with blood.*

The blood, when the disease is fully established, exhibits invariably the same properties, whether obtained by bleeding or taken from the vessels after death. The arterial and venous blood have both the same dark colour; it generally appears in a peculiar state of solution, and oily drops are frequently seen on its surface. It never exhibits a buffy coat, and the serum has been found to give out sulphuretted hydrogen.†

Under a supposition that a person has been exposed to the contagion of the plague, and in consequence of this becomes much indisposed, the first step to be adopted is to give him an emetic, particularly where nausea or vomiting ensues. If a severe retching should prevail after the operation of the emetic, this may possibly be relieved by administering the saline medicine in the act of effervescence; but if it should not, we may make an addition of a few drops of tinctura opii to each dose.

To obviate costiveness, and draw off any putrescent matter which may be lodged in the bowels, it will be necessary to make use of some gentle laxative; but large evacuations, by the aid of strong purgatives, would be very improper. In an advanced stage of the disorder, emollient clysters would be most advisable, as being less apt to excite diarrhœa, which, when it arises towards the close, generally destroys the patient. So careful are the eastern nations in avoiding this occurrence, that they most commonly make use of suppositories only.

When a diarrhœa does occur, either spontaneously or from an improper use of cathartics, it should be suppressed as quickly as possible by astringents, opiates, and every other means we can employ.

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* Copland's Sections, 36, 37, 38.

† Simon's Chemistry, i. 320.

We are informed by Dr. Russell, that many, particularly the Asiatics, make it a rule to let blood in all cases of the plague, if they see the patient at an early period; and some recommend it as late as the fourth, fifth, sixth, or seventh day; and even some European practitioners have gone nearly as far. To him it appeared that very plentiful bleeding at the first appearance of the disease was of great service.

Dr. Buchan was in the habit of occasionally resorting to bleeding, we are told by Sir James M'Gregor, and that during the first season he had met with several cases where the operation proved of the greatest service. The Turks, we are informed, employ local instead of general bloodletting, most commonly, and in the latter they draw off only a very small quantity.

Sydenham considered the plague as an inflammatory affection, and speaks of the efficacy of bleeding in the warmest terms; and Dr. Mead* not only advises venesection, but declares that we must draw blood with a more liberal hand than in other cases, if we are to expect success from it in this complaint.

The advantages of bloodletting in this disease appear to be of a very dubious nature; for we are given to understand that Dr. Whyte, one of the physicians to the forces in Egypt, used the lancet very freely, but that every one of his patients died. In the first stage of the disease, where there exists congestion or turgescence in any part of the body, the application of cupping-glasses, with previous scarification, may probably be a safer remedy than venesection.

It has been observed that a gentle diaphoresis sometimes proves critical, and carries off the disease, but more particularly when it arises spontaneously. To assist nature in throwing off the morbid matter by the pores, if possible, it will be right to employ diaphoretics, such as the neutral salts, small doses of antimonials, or the pulv. ipecac. compos., as advised under the head of Simple Fever; the effects of which may be increased by directing the patient to drink plentifully of diluent acidulated liquors; and where the heat of the body is not very considerable, his strength may be supported under this operation by means of a little wine. Profuse sweating is, however, by all means to be avoided, as, by inducing debility, it would prove injurious.

Dr. Falconer, of Bath, in his "Essay on the Plague," seems to insinuate, that no small share of the mortality formerly observed in this disease may be attributed to the sweating regimen then commonly employed for its cure. Instead of adopting this plan, he advises the avoidance of a warm bed, and indeed of a bed altogether, if possible, in the day-time; a circulation of free and cool air, light clothing, cool drinks, and particularly cold water; and he mentions, that if any benefit is to be expected from the use of this regimen, it must be tried largely and steadily; not as if cold liquor were an indulgence permitted or allowed, but as a remedy enjoined, on which the principal dependence was to be placed. In addition to these means, Dr. Falconer recommends the external use of cold water in the manner pointed out by the late Dr. Currie of Liverpool, and noticed under the head of Typhus Gravior.

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* See his works.

Sponging the body with vinegar or citric acid has been found a useful remedy.

Camphor is a medicine which has been much recommended in the plague.* This, together with cinchona and wine, are given with much advantage during the period of convalescence.

For the purpose of allaying irritation and procuring sleep, opiates are advisable; and, when used, have by no means been found to produce coma. They seem equally proper as in typhus.

If we are so fortunate as to procure a crisis by the remedies which have been advised, the bark of cinchona † should be given,

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* ℞ Camphoræ Rasæ, gr. x. ad ℈j.	* Take Camphor, ten grains to a scruple.
Mucilaginis Acaciæ, ʒiij.	Mixture of Gum Arabic, three drachms.
Ammoniæ Hydrochlor. ʒj. ad ʒjss.	Hydrochlorate of Ammonia, one drachm to a drachm and a half.
Aquæ Florum Aurantii,	Orange Flower Water,
Aquæ Puræ, ā ℥iij.	Pure Water, of each, three ounces.
Syrup. Aurantii, ℥ss.	Syrup of Orange, half an ounce.
Misce. Sumat sextam partem alternâ quâque horâ.	Mix. Let a sixth part be taken every second hour.
Vel,	*Or,*
℞ Camphoræ Rasæ, ℈j. ad ℈ij.	Take Camphor, one scruple to two scruples.
Vitelli Ovi, q. s.	Yolk of Egg, enough.
Decoct. Cinchon. ℥vijss.	Decoction of Bark, seven ounces and a half.
Tincturæ Opii, ♏xl.	Tincture of Opium, forty minims.
Ætheris Sulphurici, ʒiij.	Sulphuric Ether, three drachms.
Misce. Capiat ℥ss. ad ℥jss. quintis vel sextis horis.	Mix. Let from half an ounce to an ounce and a half be taken every five or six hours.
† ℞ Decoct. Cinchon. ℥jv.	† Take Decoction of Bark, four ounces.
Liquor. Ammon. Acet. ℥jss.	Liquor of Acetate of Ammonia, one ounce and a half.
Spirit. Ammon. Arom. ʒiij.	Aromatic Spirit of Ammonia, three drachms.
Spirit. Rosmarini, ʒij.	Spirit of Rosemary, two drachms.
Misce. Sumat ℥jss. quartâ quâque horâ.	Mix. Let an ounce and a half be taken every four hours.
Vel,	*Or,*
℞ Infus. Serpentariæ, ℥vij.	Take Infusion of Serpentary, seven ounces.
Sacchari purificati, ʒiij.	White Sugar, three drachms.
Olei Cinnamomi, ♏vj.	Oil of Cinnamon, six drops.
Spirit. Æther. Hydrochlorici, ℥ss.	Spirit of Hydrochloric Ether, half an ounce.
Tincturæ Capsici, ʒss.	Tincture of Capsicum, half a drachm.
Misce. Sumat cochl. ij. ad iv. tertiis vel quartis horis.	Mix. Let two to four tablespoonfuls be taken every three or four hours.

and be repeated frequently; but if there is no chance of obtaining this desirable end, then, besides this bark, we should adopt the other means recommended under the head of Malignant Fever, with the view of obviating extreme debility and the disposition to putrescency.

A free use of both vegetable and mineral acids * seems advisable in the plague, as well as in typhus gravior. Acidulated drinks will be highly proper. Sir James M'Gregor, in his tract before mentioned, indeed, hints that he found the nitric acid and other irregular remedies to be serviceable. He likewise employed mercury with, as he thought, some advantage; and when the mouth was speedily made sore by it, recoveries oftener took place, in the same manner as in yellow fever, than when the system proved unsusceptible of mercurial action.

It appears, from this gentleman's report, that some patients were kept under the influence of wine and opium for a time, according to the Brunonian theory, but that the practice never proved successful.

Where the patient survives the disease, the treatment of the carbuncles or buboes becomes the province of surgery. Their development at an early period ought to be assisted by stimulants and rubefacients.

We give the following passage from Dr. Williams, for it is better that the truth should be told, however discouraging it may be: —

"In the treatment of the plague," says this author, at p. 317. of the second volume of his "Elements of Medicine," "neither the practice of the French or English officers serving in Egypt has led to any happy result. The French first tried rubbing the body with oil; but these frictions, instead of being serviceable, only added to the previous anxiety and oppression under which the patient laboured. Cold affusion was also tried, but it caused hæmorrhage; mercury produced diarrhœa, to scarification succeeded gangrene, and to actual cautery, increased debility. Bleeding was, likewise, altogether unsuccessful; so that the French medical officers, baffled in every attempt at heroic treatment, at length confined themselves to watching the disease, and palliating symptoms, giving antimony on the accession of fever, and opium in diarrhœa; while they supported the patient afterwards by camphor, æther, bark, and wine."

In the British army a variety of similar or other modes of treatment were tried, with an equal want of success.

The formulæ suggested in this article are all of them taken from

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* ℞ Decoct. Cinchonæ, ℥vij.
Acidi Hydrochlorici diluti, ʒj.
Tincturæ Capsici, ʒss.
Tincturæ Serpentariæ, ʒiij.
Syrup. Papav. ʒijss.
Misce. Sumat cochl. ampla ij. vel iij. quartâ quâque horâ.

* Take Decoction of Bark, seven ounces.
Dilute Hydrochloric Acid, one drachm.
Tincture of Capsicum, half a drachm.
Tincture of Serpentary, three drachms.
Syrup of Poppies, two drachms and a half.
Mix. Let two or three tablespoonfuls be taken every fourth hour.

Dr. Copland, being some of those which he has indicated as likely to be of use.

" There can be no doubt," says Dr. Williams, " that the diet to be employed in plague must be similar to that observed in other febrile disorders, or that the patient should be limited to slops and a strictly vegetable diet in the first stages, and should be liberally supported by wine and animal food as soon as the buboes have suppurated, or the carbuncles have formed.

In order to escape the infection of this malady, the chief points to be attended to are, the avoidance of personal contact with infected persons or things, and of the inhalation arising from infectious substances.

It is well known that the pestilential virus which emanates from the human body may adhere for a long time to other substances, and preserve its power of producing and propagating future infection; and that in this manner it may be conveyed from the eastern countries into any other; the persons first attacked by being exposed to the contagion then becoming the source of infection to others.

This fact being well established, it has been judged proper by the legislature of this kingdom, and of some others, to oblige ships, persons, and all kinds of merchandize coming from places apt to be infected with the plague, to procure bills of health, or to undergo a certain quarantine, during which period the goods are, or ought to be, properly ventilated. An adherence to these regulations has of late years prevented the importation of the disease; but should it unfortunately ever be introduced, the following steps must be pursued for preventing its further propagation, and destroying the infection.

1st. A cordon should be established around the whole of the affected district, a removal of all suspected cases into quarantine be made, and all decided cases of the disease be placed in a lazaretto, surrounded by guards, so as to cut off all communication, except with such attendants as may be necessary.

2dly. The nurses or others employed in attending the sick, must take care to come in actual contact with them as seldom as possible, or place themselves in such a situation as that a stream of air may carry the effluvia towards them.[*] They should likewise pay

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[*] It is a fact well known, that the pestilential poison, unlike other ordinary epidemics, is confined to the vicinity of the affected body, and becomes so dilute at the distance of a very few paces, as to be incapable of further action. Mons. Samoilowitz, a celebrated Russian physician, and author of a very good Memoir on the Plague, insists that this disease exists neither in the air, nor is communicated by the air, but by contact alone: and Mons. Sonnini tells us, that it is sufficient for Europeans settled in Turkey to shut themselves up in their houses in order to be preserved from the contagion, even when it makes the greatest ravages in towns which they inhabit, and although they draw from without their provisions and daily food.

The report made by Sir James M'Gregor likewise shows how very limited in extent is the action of contagion in the plague. Thirteen of the medical gentlemen of the army of Egypt were directly in the way of contagion, for it was their duty to come an unrelaxing attention to personal cleanliness. Dresses of oiled silk have been strongly recommended by Sir A. Brooke Faulkner, as an invaluable armour to such persons as are constantly obliged to be about the sick.* One of these he wore himself, as did also the attendants in the Military Plague Hospital at Malta, during the extensive prevalence of the disease, in the year 1813, in that island. Medical attendants will act prudently in changing their linen and clothes, and in well washing their whole body, but more particularly their hands, with warm water and vinegar, as soon as they quit the lazaretto. It is best to select the attendants from those who have had the disease.

3dly. All substances capable of being impregnated with the effluvia, or of vitiating the atmosphere, ought to be removed from the apartments of the sick to situations where the healthy cannot suffer by them, and where they may undergo a proper purification, by exposing them to a heat of about 120° of Fahrenheit, and then freely ventilating them. The linen and other clothes of the patient should be burnt. The dead should be immediately interred: probably combustion would be preferable to inhumation.

4thly. The atmosphere surrounding the infected ought to be kept as pure as possible, so that neither the patient nor his attendants may suffer from the exhalations; with which view, the strictest attention should be paid to cleanliness, a free ventilation, and fumigating with the nitric or muriatic acid, as advised under the head of Malignant Fever. A long stay in pestilential apartments that are but little aired ought carefully to be avoided, as also the exhalations from the dead bodies, or from patients in the last stage of the disease.

5thly. To avoid whatever weakens the body, by giving way to intemperance or sensuality, or by making use of a poor diet, great fatigue, or considerable evacuation.

6thly. To keep the mind cheerful, and as free from care, anxiety, fear, and lowness of spirits, as possible.

7thly. As it is supposed that by strengthening the bodies of men we can thereby enable them to resist contagion the better, some advantages may probably be derived from using cold bathing, as also wine, bark, and other tonic medicines, with a generous diet. Where access to the sea cannot be had, and water is scarce, the substitute proposed by a late writer† is, that a shirt be dipped every morning in a saturated solution of common salt in cold

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into contact with the infected; of these, seven caught the infection, and four died. To the atmosphere of the disease all the medical men of the army were exposed, as they saw and examined the cases in the first instance; but except from actual contact, there never appeared to be any danger of contagion.

Although the disease is communicated chiefly by contact, yet it appears to me that authors go too far when they infer that it is not communicable by an atmosphere strongly tainted with pestilential miasma.

* See Edinburgh Journal for April, 1814.

† See Description of the Plague, &c. by Richard Pearson, M.D.

water, and, after being well wrung out, be put on wet and cold, keeping the body in motion for some time afterwards by moderate exercise.

Those who cannot keep themselves isolated from the contagion, will act prudently, in conformity to the observations of Baron Larrey and other writers, in opening a large issue, or perpetual blister.

In Dr. Duncan's "Annals of Medicine," for 1797, is inserted an article relating to the cure and prevention of the plague by frictions of the whole surface of the body with olive-oil, and communicated, as we are given to understand, by George Baldwin, Esq., at that period his Britannic Majesty's agent and consul-general in Egypt.

It is mentioned, that there is no instance of a person rubbing a patient having taken the infection; but by way of precaution, it is advised to anoint himself all over with oil, and to avoid receiving the breath of the infected person into his mouth and nostrils. The prevention to be used in all circumstances is that of carefully anointing the body, and living upon light and easily digestible food.

A striking observation made by Mr. Baldwin is, that among upwards of a million of inhabitants carried off by the plague in upper and lower Egypt, during the space of four years, he could not learn that a single oilman, or dealer in oil, had suffered.*

Mr. Jackson, in his "Reflections on the Commerce of the Mediterranean," likewise informs us, that in the kingdom of Tunis, where the plague frequently rages in the most frightful manner, destroying some thousands of the inhabitants, there never was known an instance of any of the coolies, or porters, who work in the oil-stores, being in the least affected by this disorder, their bodies being always well smeared with the oil, as well as their clothes being imbued with it. Frictions of the body with olive oil, and smoking tobacco, appear to be serviceable in enabling persons to resist the infection of the plague in some degree.

It has been considered as pretty certain, that in the generality of instances the contagion of the plague enters the body through the medium of the cutaneous lymphatics, and thence produces the disorder of the lymphatic glands. This idea is illustrated by the probability that the external use of oily frictions lessens the susceptibily to infection; and Sir James M'Gregor † mentions a fact which much favours the opinion, by observing, that the men who were employed in applying oily friction to the camels for some epidemy affecting them, escaped the plague.

The evidence produced in behalf of the plan communicated by Mr. Baldwin, seems more satisfactory as to the preventive powers of the application, than as to its sanative properties after the disease has once taken place. It seems, however, right to notice, that

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* It has been said, that when the plague raged in London, above two hundred years ago, the dealers in pitch, tar, and tobacco, were particularly observed to escape the contagion.

† See his Medical Sketches.

Dr. Assalini, who was a medical officer in the French army which invaded Egypt, makes favourable mention of oily frictions in his "Observations on the Plague," as being generally followed by copious sweating; and to this he thinks their beneficial operation is to be attributed. We are also told by Mr. Jackson*, that he recommended the remedy to several Jews and Mussulmans during the time that the plague was depopulating West Barbary, in 1799 and 1800; and no instance of its failure, when duly persevered in, even after infection had manifested itself, had come to his knowledge.

Dr. Copland says, that full and frequent doses of olive oil have been given both in yellow fever and plague, and that from the information which he has derived from various quarters, it appears deserving of a more extended trial than has been made of it by Europeans. He notices its use externally as a prophylactic, but without expressing any opinion as to its efficacy. On the whole, it seems to us that so harmless an expedient, even on less evidence in its favour than that here adduced, would well deserve a trial where the danger to be warded off was so fearful.

The experiments which have been made on inoculation as a means of diminishing the virulence of plague, hold out no encouragement to the adoption of that practice.

By a paper read before the Royal Society of London, on the 27th of June, 1816, it appears, from comparative experiments on the disinfecting powers of vinegar, chlorine, and the fumes of sulphur, that the best and most efficacious method of disinfecting letters coming from places supposed to be visited by the plague, is to expose them to the fumes of burning sulphur, mixed with nitrate of potass.

As a disinfectant for unoccupied rooms, houses, or other places, we should rely upon chlorine in preference to any other agent, and this may be abundantly procured by mixing intimately equal parts of common salt and black oxyde of manganese, and pouring upon it a quantity of sulphuric acid, in weight equal to that of both the other ingredients. This, however, is first to be diluted with twice its bulk of water; and the whole is to be placed in an earthen pan or vessel, and well stirred, and then left.

The chloride of lime is more suited for use in the sick room, or in the wards of hospitals, and some of this mixed with a considerable quantity of water, should be allowed to stand constantly in them; and the evolution of chlorine may be assisted from time to time by the addition of a little hydrochloric acid, care being taken that the fumes be not so abundant as to prove annoying. A little of the solution of the chloride should also be put in vessels used for receiving and carrying away the excretions of the patients, or upon any collections of filth or foul linen which may be awaiting removal; and it would be well to sprinkle some also on the corpses of the dead. These measures, however, should never be allowed to supersede a most rigorous attention to free ventilation, and a minute observance of the utmost attainable cleanliness.

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* See his Account of the Empire of Morocco.

A disinfecting powder, distinguished by the name of its inventor and manufacturer, Mr. Collins, has for some time past been introduced into common use. This is peculiar, inasmuch as it consists not of chloride of lime alone, but of the chloride of lime mixed with another salt at a time when they are both perfectly dry, and therefore exercise no reciprocal action; and this condition of dryness is maintained by packing and preserving it for use in sealed bottles. The absorption of moisture from the atmosphere on placing the powder in open vessels, or pouring it where there is more or less water to be imbibed, causes those chemical reactions to take place between the two ingredients which are supposed to result in a freer exhalation of chlorine than arises from the chlorides of lime or soda alone. Our own experience of this compound as a deodorizer is favourable; but we would again intimate our belief that to deodorize and to disinfect are totally different properties, and that the latter is not to be inferred from the former; while the evidence of its being possessed by chlorine is not sufficiently conclusive to warrant a diminished attention to free ventilation and scrupulous cleanliness. The chloride of zinc is a compound differing in character from those above spoken of, and one on which we are on every ground disposed to place even less reliance.

With a view of fortifying the constitution so as best to enable it to resist or endure the attacks of plague, a careful regulation of the bowels has been recommended, and tonics may be given occasionally, either in combination with these or by themselves. We again borrow from Dr. Copland some of the forms* which he has recommended. These of course might easily be modified according to circumstances.

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* ℞ Quinæ Disulphat. ℈j. ad ʒss.
Pilul. Aloes cum Myrrhâ, ʒss. ad ℈ij.
Extract. Anthemidis, ʒj. ad ʒss.
Misce. Fiant pilulæ xx. quarum sumatur j. nocte maneque.

Vel,

℞ Camphoræ Rasæ, ℈j.
Pulveris Capsici, gr. xv.
Pilul. Aloes cum Myrrhâ,
Extract. Gentianæ, ā ʒss.
Fiant pil. xxiv. quarum capiat ij. nocte maneque.

Vel,

℞ Infusi Cascarillæ, ℥vjss.
Potassæ Carbonat. ʒj.
Tincturæ Aurantii Comp. ʒiij.
Tincturæ Lavandulæ Comp. ʒjss.
Fiat mistura, cujus sumat sextam vel quartam partem bis die.

* Take Disulphate of Quinine, twenty to thirty grains.
Pill of Aloes with Myrrh, thirty to forty grains.
Extract of Camomile, a drachm or half a drachm.
Make twenty pills. Let one be taken every night and morning.

Or,

Take Scraped Camphor, one scruple.
Powdered Capsicum, fifteen grains.
Pill of Aloes with Myrrh,
Extract of Gentian, of each half a drachm.
Make twenty-four pills. Let two be taken night and morning.

Or,

Take Infusion of Cascarilla, six ounces and a half.
Carbonate of Potass, a drachm.
Compound Tincture of Orange-peel, three drachms.
Compound Tincture of Lavender, a drachm and a half.
Mix. Let a sixth or fourth part be taken twice a day.

MILIARIS, OR MILIARY FEVER.

The miliary eruption consists in the appearance of numerous minute and very transparent vesicles on different parts of the body, as more especially upon the neck, breast, and back. The name miliary is derived from milium, a millet seed, with which they correspond in size. On account of their minuteness and transparency, their presence may readily escape detection, especially when they are viewed in a direction perpendicular to the skin; they are somewhat more easily perceived when seen aslant or in profile, and still more so by the sense of touch, the finger passed lightly over them being sensible of a slight roughness. They have at first the colour of the skin upon which they arise, which may be reddened or natural; at a later period, as after thirty hours, the lymph within them becomes milky, and gives them a pearly aspect, at least this is said sometimes to be the case: but often the limpid fluid disappears, and they shrivel up; the cuticle becomes wrinkled, and dries into a whitish powder. It is said that occasionally some of these vesicles coalesce, so as to form others of greater magnitude. So general is the association of this eruption with profuse perspirations occurring in the subjects of it, that the title of sudamina has been applied to these vesicles; and, in support of the connection existing between these two phenomena, it is to be observed, that common as were sudamina in former times, when patients labouring under febrile diseases were subjected to a heating treatment, fresh air being excluded from their rooms, while their persons were loaded with bed-clothes, and cordials were freely given, they are now very rarely met with. Dr. Bateman accordingly tells us, that this eruption has occurred in every species of fever,—continued, remittent, inflammatory, and contagious, as well as in other cases of disease, in which considerable heat of the skin, and much sweating, had been accidentally excited. And he adds, that physicians and nosologists who have described a miliary fever as an idiopathic eruption, like the measles, small-pox, and scarlatina, have erred in different ways; some of them in supposing it to originate from a specific virus, or acrimony, like the contagion of the diseases just mentioned, and some by actually confounding the miliary eruption with the efflorescence of scarlatina. Dr. Tweedie, after stating that we have on record several accounts of an epidemic miliary fever which has at various times prevailed, thinks it evident, nevertheless, that the eruption was only an accidental or symptomatic affection, and as little entitled to characterise an epidemic as the petechiæ that appear in some epidemic fevers.*

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* Cyclopædia of Practical Medicine, iii. 115.

Dr. Craigie, too, declares it to have been well ascertained that the miliary fever and eruption is not a primary disease, but is the effect of any state of the system which induces with great feebleness of the circulation, heat of the skin, and relaxation of its capillaries.*

The learned Dr. Copland states the eruption of sudamina to be caused by irritation of the skin, and especially by profuse perspirations however induced, and to be an occasional symptom — 1st, in puerperal diseases, characterised by fever and a morbid state of the circulating fluid, under the influence of impure air, and a heating regimen; 2dly, in the early stages of small-pox, measles, and other eruptive fevers, and in the advanced state of adynamic or typhoid fevers; 3dly, in the course of fever depending upon gastro-intestinal or internal irritation or inflammation; 4thly, in connection with acute rheumatism; and 5thly, in the course of puerperal inflammations of serous membranes. In all these circumstances, he adds, this eruption is more correctly denominated sudamina than miliaria. The epidemic sweating fever, which is often attended by a miliary eruption, he considers to be more correctly designated by the name of sweating than by that of miliary fever.†

Enough has been said to show that sudamina as they were wont ormerly to occur, were in a vast majority of cases an epiphenomenon or accidental accompaniment of other diseases; and it may also be affirmed that they exerted little or no influence upon the course of these, and required little special attention farther than hat which is implied in the avoidance of the stimulating system f treatment which was their source. It appears, also, that according to the high authorities which we have quoted, the existence of disease properly designated as miliary fever, is doubtful at least, f not disproved. In speaking of the fever of 1847, which Dr. Ormerod denominates miliary, this author states that this rash as useful in a diagnostic point of view; but though its common ccurrence in connection with certain phenomena would forbid one consider it as merely accidental, its occasional absence or slight evelopment are conclusive against its being an essential or im-ortant part of the disease. He mentions, too, that many whom ere was no reason to consider as having fever also presented it, phthisical and rheumatic patients, irrespective, it should be bserved, of any tendency to profuse perspiration.‡

Admitting, then, that the constitution of the year may at times such as to cause an unusual appearance of this eruption in connection with epidemic fever and other co-existing diseases, we nevertheless might feel absolved from offering a description of miliary fever as a specific and recognised form of disease. But M. Rayer has furnished a detailed account of sudor miliaris, we ink it best to borrow from him the following sketch of it, as it as twice recently appeared in France.

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* Practice of Physic, i. 507.

† Dictionary, ii. 262.

‡ Clinical Observations, pp. 220. 221.

The malady, he conceives, may be regarded as assuming two principal forms, mild or benign, and malignant, sweating miliaria. The attack of the disease in the milder form is often proclaimed by a feeling of lassitude, pain over the eyes, and loss of appetite; frequently, however, the patient is seized at once without any premonitory symptoms. In the epidemic of 1821, which raged in the department of the Oise, many who had gone to bed well awoke bathed in sweat, which never disappeared till their death or convalescence. Occasionally, an almost imperceptible degree of fever, a burning heat, or a feeling as if a vapour were passing over the whole limbs, and still more frequently a sense of constriction about the epigastrium, precedes by some hours, or by some minutes or seconds only, the appearance of the sweat, or rather of the hot vapour, steaming at first from a part only, but soon from the whole body. The mouth is clammy, and the tongue covered with a foul white, or more rarely a yellowish fur. The appetite is lost or moderate; the urine is often natural; the bowels usually confined throughout the disease; the pulse in many cases only becomes frequent at the period of the eruption; the respiration seems oppressed, the brain unaffected. This state, with slight variation, continues through the second, third, and fourth days of the disease, on one of which, usually on the third, after a slight sensation of tingling a miliary eruption appears, spreading from the sides and nape of the neck, where it usually begins, to the ears, mammæ in the female, the back, insides of the arms, the abdomen, and the inner aspects of the thighs and legs. The duration of the vesicles individually is from two to three days, when they dry up and are followed by desquamation of the cuticle. The sweating, more constant in its occurrence than the eruption, is always copious, and has a peculiar odour compared with rotten straw. It commences with the first symptoms, and continues profuse throughout the disease, but is not accompanied with any considerable heat of surface. The whole of the symptoms decline by degrees, and disappear completely on the eighth, ninth, or tenth day.

The malignant form of this disease appears to be induced by various accidental circumstances: in one case it is a severe inflammatory affection of the stomach and intestines, in a second, true inflammation of the lungs or bladder which is set up; in a third it is the nervous system which is implicated, and then we have delirium, coma, and convulsions, which speedily prove fatal. From the commencement of their illness some patients suffer from vertigo and violent headache, complain of nausea, and make repeated efforts to vomit; or the countenance is flushed, the eyes are starting and injected, the temporal arteries throb, the pupil is contracted and immovable, and the patients sink within a few hours, comatose or convulsed. In other cases, a deep-seated pain in the chest, a diminution of its sonorousness, a crepitating rattle or a blowing noise in one or several lobes of the lungs, oppression of the breathing, which is short and quick, a frequent pulse, and sanguinolent expectoration, proclaim a concomitant inflammation of the lungs. When the digestive organs are affected, the patient complains of an acute girding pain in the epigastric region, the spasm extends to the organs of respiration, and occasions the most distressing anxiety and feeling of suffocation. Lastly, some complain of difficulty in passing their urine, and of deep pains in the hypogastric region; symptoms which, together with the high colour and deficient quantity of the excreted fluid, give unequivocal evidence of an inflammation of the bladder. The malignant form of miliary sudor occasionally proves fatal within twenty-four or forty-eight hours; the disease occasionally runs its course within the week; more commonly, however, it does not terminate till after the lapse of a fortnight, and it may extend beyond the third week.

When death is preceded by anxiety, pain, and a sense of heat or burning in the epigastrium, the mucous membrane of the stomach s red, and its capillaries injected; and this redness is continued nto the duodenum and small intestines, where, however, it becomes ess apparent. When the death has been sudden, and preceded by nervous symptoms, the vessels of the brain are found injected; and n cases in which the catastrophe has been less rapid, a greater or less quantity of serum was invariably found in the ventricles of the brain: but these results must be considered as still very ncomplete.

M. Rayer describes the sweating miliaria as a febrile con-agious disease, marked by profuse and incessant perspiration, and generally by an eruption of vesicles on the skin; the perspirations, owever, are its most constant and distinctive character, the vesi-ular eruption being often wanting, as in the epidemic of 1821, or entirely absent, as in the examples of sweating sickness in England in 1485, 1506, 1517, and 1528, which this author considers to bear an unquestionable analogy with the sweating miliaria of our own ays. Its contagious character, and the profuse disagreeable per-pirations furnish, then, the marks of diagnosis between this and he other diseases with which it might be confounded. Sudamina ppear in several diseases, and do not form any morbid individu-ity. The vesicles of herpes, and those of chicken-pox, are much rger and more prominent, while those of eczema are far more inute; and none of these are accompanied by the perspirations hich assist the diagnosis of sudamina.

Prognosis. — The miliary sudor, in its simple state, is a perfectly ild disease. The fever, and the gastro-intestinal symptoms which recede and accompany the sweating and eruption, the affections of e brain, lungs, and bladder, which may intervene at different riods of its course, combined with the general character of the revailing epidemic, render our prognosis unfavourable in different grees according to the severity of the symptoms.

No age gives immunity from this disease, but adults and females em more especially obnoxious to it. It is capable of attacking e same individuals more than once; for M. Merière ascertained that a great many of those who had been seized during the epidemic of 1821, were again attacked and died in 1832.

Excessive heat, and an atmosphere charged with electricity, have in some districts been observed to precede the appearance of the disease, which is said to occur only between the 43rd and 59th degrees of north latitude. Moist and shady situations seem favourable to its development; but it is contagious, and, when once engendered, spreads like measles or scarlet fever.

Treatment. — In the milder forms of the disease, diluents, and the application of a few leeches in the neighbourhood of any organ that seems affected, are to be recommended, an expectant treatment being most to be relied on. After the eruption has appeared, blood-letting is decidedly injurious, and seems to be only of doubtful efficacy before that event. When the eruption disappears suddenly, its return is to be solicited by external means, as frictions, mustard-poultices, &c., and in some particular cases by sudorific drinks. Emollient cataplasms and glysters allay the pains complained of in the abdomen, and lessen the dysuria. The general warm bath or the hip-bath is often used with success in appeasing the irritable state of the intestinal canal, which occasionally continues during convalescence.

These remarks, both upon the symptoms and treatment, apply more especially to the French epidemics of 1821 and 1832; and it is difficult to know what others to associate with these, with the view of stating the results of a more general experience. If the English epidemics of the fifteenth and sixteenth centuries, which differed from those now described in the brevity of their course, in their extreme fatality, as well as in being unaccompanied by any vesicular eruption, are to be considered as offering us any general guidance in other sudatory epidemics, the chief lesson that they teach is that of abstinence from any active interference, notwithstanding the apparent urgency of the symptoms. Thus we read in Hecker's "Epidemics of the Middle Ages," that during the progress of the first visitation of the sweating sickness in 1485, the people of England, having no resource but their own common sense, adopted a plan of treatment than which no physician in the world could have given them a better, namely, not to resort to any violent medicines, but to apply moderate heat, to abstain from food, taking only a small quantity of mild drink, and quietly to wait for four-and-twenty hours the crisis of the malady. Those who were attacked during the day, in order to avoid any chill, immediately went to bed in their clothes, and those who sickened by night did not rise from their beds in the morning, while all carefully avoided exposing to the air even a hand or foot. Thus they anxiously guarded against heat or cold, so as not to excite perspiration by the former, nor to check it by the latter, for they well knew that either was certain death. The report of the infallibility of this method soon spread over the whole kingdom, and thus towards the commencement of 1486 many were rescued from death. On New

Year's day a violent tempest arose, and the epidemic was swept away without leaving a trace behind.*

The result of a like treatment in the epidemic of 1506, was beyond all expectation favourable, for in few houses did any fatal cases occur; yet this victory was due probably rather to the mildness of the malady than to the efficacy of human skill†, since when this disease, in a most aggravated form, again broke out in London, in July, 1517, in spite of all former experience and the most sedulous attention, it inexorably demanded its victims.‡ Nevertheless the author, after a review of other similar epidemies, speaks of the result of the old English treatment as wonderfully fortunate, and expresses his unqualified approbation of it as judicious and truly scientific, because, in a disease having a spontaneous power of curing itself, it left that power free scope to act, and merely removed all obstacles to its exercise.§

We have here, perhaps, as useful a lesson as any experience of the past can convey to us; every fresh epidemic, even though it have the same general character, may be so modified by circumstances as to require new principles and appliances in its treatment, yet it will be unwise lightly to disregard the results of former observation as obtained in the most nearly analogous instances.

As sudamina are evidently brought on by the application of too much heat, an early attention ought to be paid to the means of preventing them from appearing in those affections which they are apt to accompany. With this intent, the patient should not be covered with too many bed-clothes; neither should the chamber be kept hot by means of too much fire, or by being closely shut up; on the contrary, a sufficient ventilation ought to be allowed, so as to keep it of a proper temperature. In doing this, we are, however, to take care not to run into the opposite extreme, and allow too free an admission of cold air.

By adopting these precautions at an early period, we may often prevent miliary eruptions, which might otherwise have appeared; and after they have made their appearance, we probably may be able to moderate them, by using the same means.

When sudamina accompany inflammatory affections, it will be necessary to have recourse to gentle aperients or laxative clysters; bleeding may in some cases be requisite, or saline draughts, with small doses of antimony, as one-sixteenth of a grain, may be advantageously given.

We entirely concur in a remark of Dr. Craigie's, where he says, "The truth is, that the miliary eruption being symptomatic, must be treated entirely according to the nature of the affection on which it depends. The best rule is not to attend much to the eruption, unless to see that with the sweating it do not impair the powers of the patient." If there be much nausea or vomiting, and a deranged state of the stomach and bowels, the mineral acids are often of service, and may be given in some such form as that prescribed below.*

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* Dr. Babington's Translation, p. 186.

† Ibid. p. 198.

‡ Ibid. p. 209.

§ Ibid. p. 298.

PURPURA.

THIS disease has usually been divided into the purpura simplex, or petechiæ sine febre, and into the purpura hæmorrhagica, the last being of a more serious and formidable nature. These two varieties may be considered as differing in degree rather than in kind, being both of them dependent on a debilitated or deranged state of the system, accompanied, probably, both by diminished tone in the capillary vessels, more especially those of the cutaneous and mucous surfaces, and by a more diffluent condition of the blood itself.

These are the most common species of uncomplicated purpura; yet it is necessary to bear in mind the existence of another form of a wholly different character, designated purpura febrilis by M. Rayer, and for which purpura inflammatoria would have been a better name. We have seen one such case in which there was œdema of the lower part of the body and of the limbs, and a similar one of M. Ollivier d'Angers is referred to by the author just mentioned.

Purpura, be it remembered, consists essentially in extravasation of blood; but the hæmorrhage taking place within certain tissues, the blood remains as an extraneous body, to be subsequently modified by the action of the absorbents. Nevertheless, whether it be retained or carried away altogether, the circumstances which determine its escape from its vessels will be similar in both cases; and as we have asthenic or passive hæmorrhages, so have we also asthenic forms of purpura; while again, as we have active hæmorrhages, occurring in plethoric conditions of the system, attended by inflammation, or by what falls little short of inflammation, so have we an analogous condition in purpura also. In either case it would be detrimental, if not pernicious to our patients, that these distinct and opposite sources of phenomena, in some respects alike, should not be recognised by the medical attendant. Dr. Parry has recorded two instructive cases of purpura febrilis simplex at p. 7. of the 5th vol. of the "Edinburgh Medical and Surgical Journal," readily cured by free bloodletting, and not referable, therefore, to debility.

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* ℞ Infus. Rosæ, ʒxj.	* Take Infusion of Roses, eleven drachms.
Acid Sulph. dilut. ♏x.	Dilute Sulphuric Acid, ten minims.
Magnes. Sulphat. ℈j. ad ʒss.	Sulphate of Magnesia, a scruple to half a drachm.
Tincturæ Cardam. Comp. ʒj.	Compound Tincture of Cardamoms, one drachm.
Misce. Fiat haustus ter die sumendus.	Make a draught, to be taken thrice a day.

In the purpura simplex, the spots, or petechiæ, are small, distinct, purple, and usually distributed on every part of the body. An obvious wasting of the solids, and other symptoms of debility, usually precede the appearance of the eruption, but occasionally it is seen in persons who, a day or two before, have been in good health.

It is generally accompanied with sensations of languor and lassitude, even in these cases; there is a furred, yellow tongue, diminished appetite, nausea, constipation of the bowels, and an uneasiness in the head, indicating great derangement of the digestive organs.

In the treatment of purpura simplex, we may commence with administering some alterative aperients, such as the chloride of mercury, conjoined with rhubarb or jalap, and then have recourse to tonic medicines, as the cinchona, or sulphate of quinine, joined with any of the mineral acids. A moderate allowance of wine will likewise be proper. Pure country air, nourishing food, regular exercise, early hours, and rational amusements, will have some efficacy in tending to combat any constitutional disposition to purpura.

Purpura hæmorrhagica is often preceded, for a considerable time, by great lassitude, faintness, and pains in the limbs, which render the patient incapable of any exertion; but not unfrequently, it appears suddenly. It is always accompanied with extreme debility and depression of spirits; the pulse is commonly feeble and sometimes quickened; and heat, flushings, perspirations, and other symptoms of slight febrile irritation, recurring like the paroxysms of hectic, occasionally attend. In some patients, deep-seated pains have been felt about the præcordia, and in the chest, loins, or abdomen; and in others a considerable cough has accompanied the complaint, or a tumour, and tension of the epigastrium and hypochondrium, with tenderness on pressure, and a constipated or irregular state of the bowels. In some cases, no febrile symptoms have been noticed, and the functions of the intestines are not unfrequently natural. In many cases, frequent syncope has occurred. Where the disease has continued for some time, the patient becomes sallow, or of a dirty complexion, and he is much emaciated, with an appearance of some degree of œdema, at first only in the lower extremities, but which, after a time, extends to other parts.

In purpura hæmorrhagica, a few small petechiæ are interspersed among larger spots of extravasated blood, varying in extent according to the situation of the part, being largest, and often appearing first where the return of the blood to the heart is effected with the least facility, or where a greater degree of warmth is produced by the covering of the part, or other circumstances; the lower extremities affording instances of this, while the spots on the face and neck are proportionably less. From the great delicacy of the cuticle on the inside of the cheeks and lips, the surface of the labia pudendi and vagina, these parts frequently pour out dark-coloured blood in considerable quantities, while at the same time the motions are often discoloured by it to an alarming degree. The slightest pressure applied to the surface of the body appears to break down the delicate and relaxed vessels of the spot, and produces a mark of contusion considerably larger than what has been covered by the compressing substance applied. On examining the gums, they frequently appear to have lost their florid complexion, to have become changed to a livid, venous hue, and to have blood of the same colour oozing from them between the teeth. From the internal parts of the body profuse hæmorrhages sometimes arise, and not being easily restrained, they often prove fatal. In some cases, however, they are less copious, returning sometimes every day at stated periods, and sometimes less frequently at irregular intervals; now and then there is a slow and almost incessant oozing of blood. The bleeding occurs from the nostrils, gums, throat, inside of the cheeks, lips, and tongue, and sometimes from the membrane of the eyelids, the external ear, and urethra, as also from the internal cavities of the stomach, lungs, kidneys, bladder, and uterus.

The only disease with which purpura hæmorrhagica is liable to be confounded is scurvy; yet the differences are considerable, and may be thus stated. Purpura is not, like scurvy, distinctly traceable to the continued use of a diet deficient in succulent vegetables and acescent fruits; it is not marked by the carious condition of the gums, or by the indurated and painful swellings about the maxillæ and legs, which are so common in scurvy; we never meet in the former disease with those fixed joints which are common in the latter; and when there are swellings, either independently of, or around the livid blotches, these are soft and impressible in purpura, while they are unyielding and hard as board in scorbutus. These differences are such as might be expected from the different characters of the blood, which deviates from the healthy condition in both complaints, scarcely coagulating in purpura, on account probably of the great diminution in its fibrin, while the blood-corpuscles and the whole solid constituents are not greatly diminished in amount; whereas in scurvy the fibrin is much increased in quantity, yet the whole solid constituents, and the blood-corpuscles in a very marked degree, are found to have fallen below the healthy standard. Dr. Budd has shown that it is an error to suppose that the blood in scurvy does not coagulate. We may add, that the specific treatment of scurvy is of little avail in purpura, and *vice versâ.*

This disease, under all circumstances, is one which denotes very extensive disturbance throughout the whole animal economy, and therefore the convalescence will generally prove tedious. Where the hæmorrhagic diathesis is constitutional, it may continue to harass the patient, more or less, throughout life. Where it arises from accidental causes, its severity and termination are in some degree under control. Where the disease terminates fatally, it is often by a sudden and profuse discharge of blood from some important organ — the stomach, lungs, or uterus.

From an attentive perusal of the cases of purpura hæmorrhagica which have been published by different writers, it would appear that there generally prevails a high degree of disorder in the digestive organs; and it therefore seems that gentle purgatives are proper at the commencement of the disease, and that a nourishing diet, country air, regular exercise, early hours, and such amusements as tend to withdraw the mind from the fatigues and cares of business or study, together with a moderate allowance of wine and tonic medicines, as cinchona, &c., with mineral acids, are afterwards necessary. Alum, in doses of from ten grains to a scruple, with ten drops of dilute sulphuric acid, may be given in the decoction of red bark, or in other astringent vegetable infusions or decoctions, as those of uva ursi, krameria, or tormentil; or gallic acid itself, in doses of ten grains and upwards, may be given in water, or in almost any vehicle in which no metallic preparation is present. The metallic astringents, as more especially the tincture of the sesquichloride or the sulphate of iron, will in severe cases deserve a trial. The former should be given to the extent of from fifteen to thirty drops, in water or in infusion of quassia; the latter is best exhibited in the form of pill, and we should commence with two grains, in extract of gentian, three times a day, and increase the dose till it appears to disagree with the stomach. Where there is hæmorrhage from any of the mucous surfaces to any dangerous extent, and the means here spoken of have failed to control it, we know of no other medicine so powerful as the acetate of lead, which must be given in doses of from one to five grains, with ten drops of acetic acid and five of tincture of opium, in distilled water, every six hours, till the hæmorrhage is arrested or colic supervenes. In the latter case, a recurrence to a mixture containing alum and sulphuric acid, will furnish an antidote to the poison, and the bowels should be at the same time acted on by a full dose of Epsom salts. We see no probability of any benefit from strong purgatives in this disease, but the bowels should be regulated by sufficient quantities of compound rhubarb pill, given occasionally; or, where mercury is thought desirable, a mixture of cathartic extract and blue pill, containing five grains of the former and three of the latter, may be employed instead. In several cases, the oleum terebinthinæ has been administered with great advantage. It may be given in doses of half an ounce, combined with the like quantity of the oleum ricini, and six drachms of peppermint water.

Some physicians have advised venesection in this disease; but in the generality of cases, the abstraction of blood would, in my opinion, be more likely to prove injurious than serviceable. In none of the cases on record did the blood drawn off exhibit marks of inflammation.

We copy the following description of purpura febrilis from the translation of Rayer's "Treatise on Diseases of the Skin." Purpura febrilis may be sporadic or epidemic; its ordinary duration is from two to three weeks; it attacks persons of all ages, and of every variety of constitution.

A feeling of great lassitude and depression, shivering fits of longer or shorter duration, followed by heat, pains in the back and limbs, headache, and oppression, sometimes a sensation of great heat over the whole body, nausea, retching, quickness of the pulse, and other pyrexial symptoms, are the precursors of the petechiæ or ecchymoses. They appear from the third to the sixth day, sometimes without hæmorrhage from the mucous membranes or the viscera (purpura febrilis simplex).

In purpura febrilis after the primary fever, hæmorrhages occasionally occur from one or other of the different passages of the body, at the same time that petechiæ and ecchymoses are formed in the skin and subcutaneous cellular tissue (purpura febrilis hæmorrhagica). In some patients the urine is highly tinged with blood; the pulse, small in the first instance, sometimes acquires more strength and softness after a first hæmorrhage, but upon further loss of blood all the symptoms of purpura hæmorrhagica non febrilis may occur.

The antiphlogistic treatment generally, low diet, &c., is usually applicable in purpura febrilis and hæmorrhagic fever. The temperature of the body and of the outward air should be kept very moderate. If the first febrile symptoms are of a serious nature, if the hæmorrhages that have taken place have not been very profuse, and as a still stronger reason, if the pulse be strong, full bleeding should be had recourse to once, and again if it should appear to be indicated. Immediately after bleeding purgatives are extremely useful; calomel with jalap, or calomel with rhubarb, are suitable cathartics in these cases; and a draught containing three drachms of liquor of acetate of ammonia, with one-twelfth of a grain of tartar emetic, and five of nitre, given in camphor mixture thrice a day, is very serviceable in restraining the hæmorrhagic tendency.

PEMPHIGUS, OR VESICULAR ERUPTION.

This disease consists in an eruption of isolated vesicles over different parts of the body, internal as well as external, which gradually increase to the size of a large nut, contain a yellow serous fluid, burst in the course of some days, and leave the skin reddened and covered by a thin film of new cuticle. By some authors it is described as being attended both by fever and contagion; and by others as being accompanied by neither. It is supposed that there are two species of it, the chronic and the acute. The disease is, however, of very rare occurrence. Dr. Willan[*] describes three varieties of it, viz. pemphigus vulgaris, pemphigus contagiosus, and pemphigus infantilis; but he has never seen any instance of the first two. The last, he says, occurs sometimes in weak, emaciated children, who are destroyed by the pain and irritation of the successive vesications and ulcerations.

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[*] See his Treatise on Cutaneous Diseases.

By the generality of the physicians who have favoured us with their opinions, the principal of whom is Dr. Dickson*, it has not been considered as contagious. This gentleman saw six cases of the complaint, in none of which it was received by contagion, nor communicated to those who attended the sick. Dr. Cullen informs us that the blisters are filled with a thin ichor, which is discharged, not absorbed, as mentioned by Dr. Dickson; but during his whole practice it appears that he met only with a single case of pemphigus.

Some slight degree of lassitude, sickness, and headache, having prevailed for a day or two, small vesicles of about the size of a pea make their appearance over different parts of the body, and not unfrequently in the mouth, and other portions of the alimentary canal; and these gradually increase till they become as large as a nut or almond. Now and then they are to be met with of the size of a walnut. They are seldom surrounded by any inflamed margin, or areola, but are distended with a faintly yellow serum. They often are accompanied with difficulty of deglutition, nausea, vomiting, a sense of soreness in the abdomen, and intense heat of the skin. Sometimes they are so numerous as to run into each other. The pulse is small and frequent, and the patient is sensible of a considerable degree of debility.

After the vesicles have remained for some days, they either break and discharge their contents, or they begin to shrink, and so disappear.

This seems to be the most favourable termination, as they have been known to leave troublesome ulcers behind them when they broke.

Pemphigus resembles the small-pox, in frequently leaving pits in the skin, and in the parts which the vesicles occupied remaining of a dark colour for a considerable time afterwards. In the third volume of "Medical Facts and Observations," Dr. Winterbottom takes particular notice of this occurrence.

We are to be influenced in our prognosis by the seat and appearance of the vesicles. When they appear only on external parts, and are not numerous, they demand little attention; when they are numerous, when they attack the alimentary canal, and are attended with a small hard pulse, and great prostration of strength, the danger is considerable.

On taking a comprehensive survey of what has been recorded by eminent writers on the subject (and in addition to those already referred to, I beg leave to add Dr. Hall*), we must, I think, conclude, that pemphigus is an affection merely sporadic, and not of a contagious nature; that it is connected with a state of debility; and that the symptoms accompanying one or other instances of this affection are those which attend febrile diseases, whether inflammatory or putrid. The most important distinctions necessary to be ascertained appear, therefore, to be,

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* See his Paper on Pemphigus, in the Transactions of the Royal Irish Academy, 1787.

1st. Whether the fever is of an inflammatory nature, and accompanied with a strong and increased action of the vascular system: or,

2dly. Whether the fever has a tendency to the typhoid type, and is marked by great debility, and other symptoms which denote a tendency of the fluids to putrefaction. It will be obvious, that in the first case, evacuation and other antiphlogistic remedies will be proper; and that in the second, it will, on the contrary, be necessary to shun all evacuations, and to employ those remedies alone which support the strength, and give tone and vigour to the system.

In most cases the disease seems to be connected with a certain state of debility, and a tendency of the fluids to putrefaction, and therefore the indications of cure are obvious.

Having cleansed the stomach by a gentle emetic, where nausea prevails, and dislodged the contents of the intestines by some mild laxative, such as the saline purgatives, or small doses of the submuriate of mercury with jalap, we may then give the cinchona bark, either in infusion, decoction, or powder, along with wine. The mineral acids, in a state of proper dilution, if administered early, will likewise be of service in obviating the effects of debility, and any tendency to putrefaction.

On the first accession of the disorder, if the skin is hot and dry, it may be of service to give the saline medicine, with small doses of some mild antimonial, in order to excite a gentle diaphoresis; but these should not be continued long.

To diminish the effects of irritation, opiates combined with sulphuric æther will be proper.

Where vesicles arise in the mouth, and break, so as to become ulcers, we should then employ detergent gargles.

If there is reason to apprehend that the eruption has extended to the alimentary canal, it will be necessary to order copious draughts of some mucilaginous drink, as the infusum lini comp., or decoctum malvæ compositum.

When obstinate ulcers are formed on any exterior part of the body, in consequence of the vesicles breaking, the assistance of a surgeon will be requisite.

Some practitioners are in the habit of opening the larger vesicles; but the propriety of this step is not yet fully established.

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* See Essay on Pemphigus, by Dr. Hall, in volumes 3rd and 4th of the Edinburgh Annals of Medicine.

On recovery, the patient's strength is to be recruited by tonics and other auxiliaries, as noticed under the head Dyspepsia.

We believe the more acute form of pemphigus solitarius, with its large bullæ, to be amenable to appropriate treatment, or at all events to come to an end after no very long continuance; but the chronic form we have found excessively intractable, persisting for many months, notwithstanding the use of the means recommended above, and even a persevering employment of arsenical preparations.

URTICARIA, OR NETTLE-RASH.

This disease takes its name from its being attended by an eruption in the skin, similar to that produced by the stinging of nettles, accompanied by severe itching and tingling, and occasionally terminates in a desquamation of the cuticle. Dr. Willan, in his "Treatise on Cutaneous Diseases," notices six varieties of it.—See Order III.

For practical purposes, I consider it only necessary to notice two varieties, viz. the urticaria febrilis, or acute form of the disease; and the urticaria evanida, or chronic, this being without any extensive efflorescence of the skin, and unaccompanied by febrile symptoms. Under this species, I likewise include those cases where the eruption is of very short duration, say a day or so; but returns frequently, leaving behind it a severe itching and tingling sensation in different parts of the body, particularly in the arms, shoulder-blades, chest, sides, and thighs; and from these distressing ailments the patient is seldom free. Under this variety of the complaint the author of the "Modern Practice of Physic" has long been a great sufferer.

In urticaria febrilis, the symptoms which precede the eruption are, sickness at the stomach, with pain, great languor or faintness, drowsiness, headache, anxiety, a white fur on the tongue, and an increased velocity in the pulse. After a day or so, these symptoms are succeeded by wheals, or very small pimples, dispersed over different parts of the body, together with a considerable efflorescence in patches of a vivid red, and sometimes nearly of a crimson colour. They are attended with a most distressing itching and tingling, which become greatly aggravated during the night, and deprive the patient of rest for many hours. The patches often coalesce, so as to produce a continuous redness; they appear on most parts of the body, but are particularly diffused on the shoulders, loins, nates, thighs, and knees. Sometimes they extend to the face; and a red circle may often be observed in the palm of one of the hands, accompanied with a sense of great heat and itching. They appear and disappear first on one part of the body, then on another, being frequently preceded by a sense of chilliness. During the day-time, the efflorescence fades, and the wheals subside; but both of them return in the evening, together with a slight febrile paroxysm. The patches of efflorescence are often elevated above the level of the adjoining cuticle, and form, as it were, dense tumours, with a hard distinct border, the interstices being of a dull white colour. The face is often swelled and inflamed on each side of it. The pain and sickness at the stomach are usually relieved on the appearance of the eruption, but these symptoms are apt to return when it disappears. The duration of the eruption is usually about six or seven days; all internal disorder then ceases, and the efflorescence exhibits a light purple or pink colour, and so gradually disappears, being succeeded by a desquamation, or slight exfoliations of the skin in very severe cases.

Urticaria febrilis is not a dangerous complaint in general, although occasionally it is productive of alarm, especially when sickness and a high degree of languor produce repeated fits of fainting; but from the extreme heat of the skin, and severe itching and restlessness which attend the disease, it is apt to prove very distressing and troublesome to patients afflicted with it.

This is often induced by the ingestion of various articles, such as shrimps, lobsters, crabs, the roe of certain fishes, and above all, mussels. Various other substances, too numerous to detail, and among them some medicines, as valerian and copaiba, have been known to give rise to it in such as are predisposed. The disease, as produced by mussels, has proved fatal in several recorded instances, death resulting in some of these from the excessive depression of the circulation; preceded in most cases by intense itching of the surface, by extreme difficulty of breathing, and accompanied by more or less of nervous affections, as indicated by the occasional occurrence of delirium, coma, or convulsions, and more generally of some degree of paralysis of the lower extremities. These formidable symptoms have not been satisfactorily proved to depend upon any morbid condition of the mussel, upon its putridity, or upon the presence in it of any peculiar ingesta, yet it can hardly be doubted that they are due to some as yet undetected modification in its ordinary state.

The chronic variety of the disease appears without fever, and without any extensive efflorescence of the skin. Sometimes the eruption consists of round wheals; at other times of longitudinal elevations of the skin, like those produced by the stroke of a whip: they are white at the top, but in some cases there is a slight redness at the base. They never tend to suppuration. They are perceived most numerous on those parts of the body which are closely covered, but appear on every part of it. The eruption appears and disappears several times perhaps in the course of the day and night, according to the temperature of the air, or the degree of exercise used by the person afflicted. A severe and distressing itching and sense of tingling or stinging attend the eruption, and darting pains similar to the pricks of needles, are frequently felt. The disease continues with repeated eruptions, more or less numerous, for several months, and in some few cases even for years. This has happened in that chronic form of the disease described by Dr. Willan under the term Urticaria subcutanea. The two varieties of the complaint are most apt to occur in persons who have a delicate stomach and an irritable skin. Agitation of mind, great anxiety, fatigue, heat, exposure to cold when the body has been in a state of perspiration from severe exercise, and the use of too stimulant a diet, have been enumerated as the occasional causes of these varieties of urticaria.

In the treatment of urticaria febrilis, it may sometimes be necessary to give a gentle emetic at the commencement of the disease, particularly when it has arisen from having eaten any thing of a noxious nature; and a full dose of sulphate of zinc, as half a drachm, will be preferable to any of a more nauseating character. The bowels, too, should be freely opened, with a view to the complete removal of the offending cause. In fact, the use of a cathartic may often supersede that of the emetic, especially where sufficient time has elapsed to allow of the passage of the noxious matter into the intestines. A full dose of calomel and jalap, or of calomel and rhubarb, is well suited for this purpose; while the sesquicarbonate of ammonia, in five-grain doses, dissolved in an ounce and a half of camphor mixture, or water, should be given at frequent intervals, as every two hours, during the continuance of the urgent symptoms, and the patient be encouraged to drink freely of milk. The spirit of sulphuric ether has, in some dangerous cases of poisoning, been administered with good effect: but, on the whole, we give the preference to ammonia. This plan of treatment will be found, in the most aggravated cases, to be followed by speedy relief of the difficulty of respiration, the distressing tingling, and other formidable symptoms. In every variety of the chronic disease we have had experience of the beneficial results obtained by antacids and ammonia. In these, much relief will be afforded by the exhibition of carbonate of magnesia in pimenta water, with just so much Epsom salts as will procure a gentle action of the bowels once or twice a day. Under the use of this medicine the tongue will clean, and the disease abate; and it may be soon followed by moderate doses of ammonia in some bitter infusion, as that of orange-peel, calumba, hop, gentian, or cascarilla; the bowels being regulated by a mild aperient pill. During the whole time the patient's diet should be such as is easily digestible; care being taken to ascertain what particular articles of food are found to act as exciting causes in each individual case, and these, when ascertained, being strictly interdicted. When in this way we have greatly mitigated, if not subdued the complaint, we shall best guard against its return by fortifying the system by the use of a grain or a grain and a half of quinine, in the form of pill, taken twice a day, half an hour before breakfast and dinner. These are the means on which we chiefly rely, yet in some cases, in the latter stages, advantage will arise from the use of the mineral acids; and other means of strengthening the system, as moderate sea-bathing, may also be of service.

Some practitioners advocate the use of the mineral acids at the outset of this disease; as in the compound infusion of roses, in which half a drachm of sulphate of magnesia is dissolved, and a drachm of tincture of orange-peel added.

HERPES ZOSTER, OR SHINGLES.

The eruption in the shingles usually occupies the epigastric region, and in the generality of cases extends half round the waist, in a semicircular form; but in some instances goes completely round it, and appears in small distinct vesicles, filled with a limpid fluid, the surrounding skin being at the same time occupied by great heat and redness, accompanied by severe and distressing itching, sharp lancinating pains, and a considerable degree of fever.

Observation has not enabled physicians to deduce any satisfactory conclusions as to the cause of the disease in question. The shingles have not been supposed ever to arise from contagion, or to have been extended from one individual to another by any intercourse between them. The disease may occur more than once in the same person.

Youthful persons are most liable to its attacks, and girls are oftener affected by it than boys. It is rarely met with in either men or women who are far advanced in years; but instances to the contrary do now and then occur; as in a severe case occurring in a man of seventy-four: he had previously been visited with several attacks of urticaria.

The commencement of the disease is generally marked by slight febrile indisposition, languor, and loss of appetite; the person, at the same time, complaining of heat in the side about to be affected, pains shooting through the chest and epigastric region, with a sense of fulness therein. In some cases the symptoms are so slight as scarcely to attract his attention; but in others they are very considerable and distressing. On the second or third day, several red patches may be observed on one side of the abdomen, breast, or shoulder, upon which are numerous elevated points, clustered together, accompanied by a sensation of great heat, and a very severe and distressing itching. The points are speedily increased to the size of a large pearl, and put on the appearance of vesicles filled with a limpid fluid. In some cases they are so closely set as to leave no interstices between them, the whole cluster forming an oval or circular patch, of various diameter, and surrounded by a red margin.

During two or three days, while the patches that appeared first are enlarging, others continue to show themselves with some degree of regularity, and extend nearly in a line from the sternum or linea alba, round one side of the abdomen, as far as the spine, like a sash or belt half round the waist, in the generality of cases, but in a few making a complete circle, from which circumstance the disease takes its English name; this being derived from the Latin word *cingula*. In some cases, the eruption appears across the shoulders, like a sword-belt.

In the course of five or six days, it is usual for the eruption to cease extending or multiplying; and in the mean time, the vesicles which had first appeared begin to lose their transparency, and assume more the character of pustules somewhat of a confluent nature, and by degrees acquire a livid colour, ultimately sinking into thin brown scabs. The patches which have appeared late go through the same course; and in about a fortnight's time, nothing but the dry brown scabs remain. These, when they fall off, leave the parts underneath of a dark-brown colour.

The fever sometimes subsides on the appearance of the eruption; but it more frequently happens that the febrile symptoms continue through the whole course of the disease, and this probably from the incessant irritation occasioned by the painful and very distressing itching and smarting which are attendant on the eruptions. In many cases, a deep-seated and intense pain arises in the chest towards the close of the disease; but in others, the degree of pain is much less.

In mild cases, the disease is not attended with danger; but in very severe ones it has been known to terminate fatally. In those of the former nature it usually goes through its course without any untoward occurrence, leaving the patient, however, in a debilitated state; but in those of the latter kind, severe and extensive ulcerations are apt to arise. In the course of ten days or a fortnight the eruption subsides, and the patient is restored to tolerable health; but when the attack has been very severe, he often experiences, for many months perhaps, a great soreness and tenderness of the skin of the side which had been occupied by the eruption, accompanied by some degree of itching, and occasionally sharp pains darting through the muscular parts beneath, with other neuralgic or distressing symptoms.

The disease appears to be of a critical nature, and therefore requires that in the treatment of it no repellent application be employed. A little fine starch or hair-powder may be sprinkled over the vesicles when they begin to break, for the purpose of absorbing the fluid discharged from them; after which, if necessary, to guard against any friction from the clothes, the parts may be covered with soft lint spread with the unguentum cetacei, or ceratum calaminæ.

The patient is to be kept moderately warm, and to drink, from time to time, some tepid diluent fluid, taking about two grains of antimonial powder made into a pill at bed-time, adding to it, if necessary, one grain of opium, for the purpose of giving rest, and allaying the pains and itching. The state of the bowels is also to be carefully attended to, and costiveness obviated by gentle aperient medicines. After the eruptions have become dry and scaled off, two or three doses of some cooling purgative, such as a solution of the sulphate of magnesia in an infusion of senna, should be taken, with an interval of a few days between each dose.

To allay the severity of the itching, cooling washes are sometimes resorted to; but that which I have found most beneficial is composed of about two ounces of a solution of the acetate of ammonia, mixed with twelve ounces of elder-flower water. I have seen solutions of opium, extract of belladonna, and the potassæ sulphas, employed for the above purpose, but without any good effect.

The great debility consequent upon severe attacks of the shingles should be obviated by a change of air, a preference being given to that on the sea-coast; by daily exercise in a carriage or on horseback; by a generous nutritive diet; and by tonic medicines, as the sulphate of quinine, &c.

In relieving the neuralgic and other distressing affections often consequent on herpes zoster, the sesquioxide of iron, in doses of one scruple to a drachm, has been found to prove highly beneficial in some instances.

ORDER III.

PHLEGMASIÆ, OR INFLAMMATIONS.

INCREASED redness in the affected part, heat, pain, and frequently swelling, a disturbance of function, pyrexia, and buffiness of the blood on cooling, may be considered as characteristics of inflammation.

Before I proceed to speak of the different inflammatory diseases to which the human frame is liable, it seems proper to make a few observations on inflammation in general; as likewise to point out the different species of it which are to be met with in practice, and the constitution most liable to be attacked.

"In order," says Dr. Alison, "to give the requisite precision to the general notion of inflammation, as a local change of the condition of any part of the body, it seems only necessary to include in it, besides the pain, swelling, heat, and redness, the tendency always observed, even when the changes in question are of short duration, to effusion from the blood-vessels of some new products, speedily assuming in most instances the form either of coagulated lymph or of pus."

Those cylindrical vessels which lie in the course of the circulation intermediately between the arteries and veins, and which, on account of their minuteness, have been termed capillaries, are regarded as the primary seats of the inflammatory action. The change which they undergo during this action is now generally admitted to be accompanied by their distension, so that they contain each a larger column of blood than in a healthy state. Hence some which are generally invisible become distinctly perceptible during the existence of inflammation. It appears, moreover, that this increase of their capacity is so considerable, that, although the afflux of blood to the inflamed part by the arteries supplying it, and the quantity of blood returned by its veins, is always greater than in health, yet the current in the intermediate capillaries is always found to be retarded. It is evident, therefore, that their capacities are increased in a greater ratio than is the amount of blood traversing them. "It does not appear," says the author just quoted, "that either acceleration or retardation of the flow of blood is essential to the state of inflammation; and although the latter state is always predominant in the parts most severely affected, yet, in consequence of the accelerated flow in the neighbouring vessels, the whole quantity of blood returned by the veins from an inflamed part (as in the case of the hand) is found to be greater, and when the inflammation is severe to be three or four times greater, than that returned within the same time by the veins of the opposite sound organ."

The state of the vessels here described is probably always co-existent with inflammation when established; nevertheless, there seems reason to believe that it is often preceded by an opposite condition of contraction, occurring subsequently to the impression of the exciting cause of the inflammation, though this precursory condition may be of very short duration. So too, when inflammation occurs in serous or mucous membranes, the first effusions from the blood-vessels go to increase, and probably attenuate, the natural exudations from these surfaces; but as the inflammation advances, the fluid thrown out becomes always, as in other parts, of thicker consistence, as well as more copious than natural, and often more or less distinctly purulent.* Yet prior to all this there is a stage of diminished or suppressed secretion, as every one must have felt in the instance of a common cold of moderate severity. Dr. Craigie writes to this effect in speaking generally of a mucous membrane suffering inflammation; for he says it is at first unusually dry, and then begins to secrete a thin serous fluid.

We cannot particularise, in a work such as the present, all the modifications of secretion, or all the forms of effusion, that may be taken as conclusive evidence of the existence of inflammatory action, or describe the various circumstances under which they occur; but we may briefly state that the production of coagulable lymph, or of purulent matter, may be always considered as deciding this matter in the affirmative; and the same may perhaps be said of mucus, when excessive in quantity or very viscid in consistence.

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* Alison, p. 101.

As regards the effusion of serum or blood, either of these may have a double source. In the former case, the presence of more or less coagulable lymph in the serous fluid may indicate its inflammatory origin; in both cases, pain, and the general symptoms of pyrexia, will be sufficient to guide us to the same conclusion; yet both serum and blood are more commonly effused as a consequence of congestion alone.

But besides alterations or modifications of secretion, there are other changes occurring in the tissues themselves that mark the progress of inflammation. Thus there may be destruction of some portion of the parts which are its seat, constituting sphacelus or gangrene. Or again, there often is softening of mucous membranes, accompanied by opacity and superficial ulceration, or the formation of abscess in the case of the more solid organs. Induration, again, appears to be a result of chronic inflammation in many instances, and it is often accompanied by some thickening of substance.

The most favourable termination of inflammation is that by resolution, in which either the morbid action is arrested before the formation of new products, or these are discharged or absorbed, so as not to leave any traces of their existence. Abscesses and ulcers, however, may heal, and softened membranes be restored, so as to leave the parts affected, or the system at large, but little injured by their production. The effusion of coagulable lymph, and its subsequent organisation and conversion into false membrane, can scarcely take place without some detriment to the general health. Peculiar alterations in the condition of the blood are observed as attendants upon acute and extensive inflammations; thus it is known that a buffy or almost colourless stratum is formed on the surface of the coagulum of blood drawn under these circumstances. There is a tendency, too, to contraction in the clot, and the surface is wont to assume a cupped or concave form. These deviations from the ordinary state are most conspicuous where serous membranes are largely implicated, are less observed where solid organs or parts only suffer, and are still less marked as a general rule when the inflammation is confined to mucous membranes. In all acute inflammations the proportion of fibrin is found to be increased, and the temperature of the blood raised above the standard of health; and those general symptoms arise which belong to the state of pyrexia. The functions of the organ affected are wont to be impaired in various degrees.

Inflammation is excited by mechanical or chemical irritation (including heat) applied to the part itself which inflames; it is excited by cold, applied generally, or to parts distant from those that inflame, and by certain poisons, as all irritants, and certain contagions, as the virus of small-pox, or of others of the exanthemata. The introduction of any foreign matters into shut cavities is almost constantly followed by inflammation in the membranes which line them. There are, however, many cases of inflammation for which no adequate exciting cause can be detected.*

We quote at length from Dr. Alison the following statement as to the circumstances predisposing to inflammation, in order that his authority may support conclusions which our own experience has verified, but which are in direct opposition to popular prejudices, and to opinions expressed in former editions of this work.

"The tendency to inflammation is not in general given by plethora (although the gouty inflammation occurs at first almost solely in plethoric habits), nor by habitual excitement of the vascular system. On the contrary, there are none who resist the exciting causes of inflammation so well, as those in whom the blood is abundant, and the vascular system vigorous. But the tendency to inflammation is remarkably given by all permanent causes of debility, — by imperfect nourishment, impure air, long-continued heat or cold, excessive evacuations, mental depression, excessive exertions, and intemperance. Of the numbers who fall into disease under the influence of these causes, a very large proportion are always found to have contracted different forms of inflammation." "The influence of a truly tonic regimen," he subsequently adds, "in protecting against inflammatory disease, is easily proved by statistical facts." †

We have carefully scanned Mr. Paget's Lectures, very lately delivered before the Royal College of Surgeons, and as these constitute the most recent publications on the subject of inflammation, we shall glean from them a few particulars which may tend to elucidate its nature, and appear possessed of a practical interest. Speaking of the ordinary state of the blood-vessels of an inflamed part, he says, that they are all dilated and elongated, tensely filled with blood, of which the red corpuscles are in excess, often wavy and tortuous, and sometimes variously aneurismal. He points out the varying velocity of the blood in the inflamed vessels, and repudiates, perhaps too absolutely, all reference to mere mechanical laws as influencing these changes. "I think I can be quite sure," he says, "that the velocity of the stream in any vessel of an inflamed part is not determined by the diminution or enlargement of its channel. Without change of size, the stream may be seen decreasing from extreme velocity to complete stagnation." It is particularly to be observed, in relation to the phenomena of inflammation, that the stagnant or retarded blood is not apt to coagulate in its vessels; it has been found fluid after at least three days of complete stagnation, and it is believed that it would remain so till cleared away, unless there be some sloughing in the part affected.

According to this author, microscopic examination of the blood does not support the theory of the dependence of inflammation either on the accumulation of large numbers of white corpuscles in the vessels of the inflamed part, or upon that clustering together of the red corpuscles which is seen to take place in inflamed blood withdrawn from the body, and to which, in part at least, the formation of the buffy coat is referred. He has seen no such clustering, either in the inflamed bat's wing, or in the vessels of inflamed organs examined after death; and he agrees with Mr. Wharton Jones, and Dr. Hughes Bennett, in the opinion that an abundance of white corpuscles, that is, of rudimental blood-cells in the vessels of an inflamed part, is neither a constant nor a frequent occurrence.

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* See Alison, pp. 140, 141. 143.

† Ibid. 143.

Coagulable lymph being the chief and most characteristic product of inflammation, it is interesting to note its modifications as resulting chiefly from the different constitutional states of the subjects of the inflammation; and it appears that there are two chief forms of organisation, which, though they are often seen mixed in the same lymph, are yet so distinct as to warrant the speaking of two varieties by the names of fibrinous and corpuscular. The highest health is marked by the most perfect and unmixed fibrin; the lowest by the most abundant corpuscles, and their nearest approach, even in their early stage, to the characters of pus-cells. The degrees of deviation from general health are marked either by increasing abundance of the corpuscles, their gradual predominance over the fibrin, and their gradual approach to the character of pus-cells, or else by the gradual deterioration of fibrin, in which, from being tough, elastic, clear, uniform, and of filamentous appearance or structure, it becomes less and less filamentous, softer, more paste-like, turbid, nebulous, dotted and mingled with minute oil molecules. The facts on which it is held that in general one part is prone to the production of one certain form of inflammatory exudation are such as these, that *e. g.* in the apparently spontaneous inflammations of the skin, lymph with corpuscles alone is produced, as in herpes, eczema, erysipelas; that in serous membranes the lymph is commonly fibrinous, and has a great tendency to become organised, and to form adhesions; that in mucous membranes there is as great a tendency to suppuration; that in the lungs, both fibrin and corpuscles are abundant in the lymph, and the corpuscles have a remarkable tendency to degenerate into either pus-cells or granule cells; that in the brain and spinal cord, the tendency is to a preponderance of corpuscles that quickly degenerate into granule cells, while in the cellular tissue, both fibrin and corpuscles appear on the whole equally apt to degenerate into pus, or to be developed into filamentous tissue. It is, however, not unconditionally true that each tissue has its proper mode and product of inflammation. It has been too much overlooked, that a morbid condition of the blood, or perhaps even of the nervous force, may determine at once the seat of the inflammation, and the form or kind of the inflammatory product. Thus a variolous condition of the blood may be said to determine at once an inflammation of the skin, and the purulent form of inflammation; and so in rheumatism, whether seated in serous membranes or in fibrous tissues, there seems to be the same tendency to serous and fibrinous effusions, which are slow to coagulate or organise, and even less prone to suppuration. On the whole, therefore, the best conclusion may be, that in any given case the issue of an inflammation, and especially as to whether it will correspond with the adhesive or suppurative form, may be represented as the resultant of these two chief influences — the previous condition of the blood, and the nature of the part affected.

The supposed influence of a tissue in determining the character of the lymph formed in its inflammations, may be very probably explained by believing that the primary product of inflammation is often a mixture of lymph, and of the secretions or other product of the inflamed part, more or less altered by the circumstances of inflammation. When it is seen that in the inflammations of bone the lymph usually ossifies, in those of ligament is converted into a tough, ligamentous tissue, and that in general it is converted into a tissue more or less corresponding with that from whose vessels it was derived, we may best explain these facts by believing that the material formed in the inflammation of each part partakes from the first in the natural products of the part. In cases of inflamed mucous membranes, the product is often a substance with characters intermediate between those of the proper mucous secretion and those of lymph. And again, as a general rule, the less the degree of inflammation is, the more nearly is the product like that naturally formed in or by the part, till we descend to the border at which inflammation merges into an exaggerated normal process of secretion, as in hydrops articuli, hydrocele, coryza, &c.

If we would trace farther the history of effused coagulable lymph, we are told that, whatever its form, its development requires nearly all those conditions which are necessary for the normal development of the proper constituents of the body. It needs, in general, the due supply of healthy and appropriate blood, the normal influence of the nervous force, and, for the highest and latest forms of development, the normal condition of the proper elements of the affected part. Now the existence of these conditions for the development of lymph, implies a cessation of the inflammatory process, and a recovery from whatever originated or maintained the inflammation; and, accordingly, as long as inflammation lasts, no high development of the exudation already formed will take place. But supposing these conditions fulfilled, if it be asked into what tissues the lymph will be transformed, two things seem chiefly to determine this, namely, first, the natural tendency of organisable lymph produced in inflammations to form fibro-cellular or fibrous tissue, and, secondly, the tendency which all lymph has to assume, sooner or later, the characters of the tissue in or near which it is seated, or in place of which it is formed. Hence, as scars improve, *i. e.* gain gradually more of the characters of skin, so do false membranes and the like acquire, by their own nutrition and development, more nearly the characters of the parts with which they are connected. Thus false membranes in the serous cavities acquire a covering of epithelium, exactly like that which covers the original serous membrane, and their tissue becomes perfectly fibro-cellular. Mr. Paget throws the weight of his argument and authority on the side of those who consider that the formation of the proper blood-vessels of organising lymph is not from the materials of the lymph itself, but by outgrowth from the vessels of the adjacent part.

From the laws of the development, we pass to those of the degeneration of effused lymph, and omitting some instances of minor importance, we come to speak of the degenerations of lymph-cells into pus-cells, or more generally of the process of suppuration that is connected with inflammation. The purulent is the most frequent of the degenerations of lymph, ensuing in almost all cases in which it is placed in conditions unfavourable to its development, as in the persistence of inflammation, in exposure to air, or in general defects of vital force. When once formed, pus-cells, if they are retained within the body, have no course but to degenerate farther; it is characteristic of their being already degenerate, that they can neither increase nor develope themselves. Their chief degenerations are threefold.

They wither, as in the scabbing of pustular eruptions, or in long-retained and half-dried strumous abscesses.

Or they may be broken up, whether before or after passing into the fatty degeneration, which is one of their most common changes, and in which they are transformed into granule-cells. It is this breaking up into minute particles, which probably precedes the final absorption of pus.

Or, lastly, both the cells and the fluid part of the pus may alike yield fatty and calcareous matter, and this may either remain diffused in fluid, or may dry into a firm mortar-like substance.

These are not stated as all the forms that may result from the degeneration of pus, but as the principal or typical ones, under which nearly all others may probably be classed.

We have spoken hitherto of the productive effects of inflammation, and of some of the secondary changes in those products, both such as tend to farther development and to degeneration.

The influence of inflammation, as exhibited in the parts which are its seat, are almost universally injurious or destructive. One of the most common of these is a speedy softening of its substance, due not only to infiltration with fluid, but to an actual loss of consistency. Of such mere softening, some of the best examples are in the true inflammatory softening of the brain and spinal cord, in which the softened part is usually found to consist of spoiled nervous substance, together with more or less abundant granular products of inflammation. Such softening, also, may be found in lungs which have undergone hepatisation, and yet more strikingly in bone, which, when acutely inflamed, may be so softened that a knife will penetrate it. Ligaments may be softened during inflammation so as to undergo considerable elongation, and, when the inflammation subsides, may recover their toughness, or even become indurated, but not recover their due position.

But softening and fatty degeneration of tissue, an occasional accompaniment of inflammation, are favourable to complete removal by absorption, which constitutes another example of the destructive effects of inflammation. It is held, indeed, that no absorption of the living tissues can take place without previous change or degeneration of that which is to be absorbed. In the case of an abscess formed in the subcutaneous tissue, lymph is first infiltrated through a certain area of the tissues, forming a hard, circumscribed, inflamed mass. Of this lymph we may suppose the greater part degenerating into pus. It may begin to do so at a central point, that at which the conditions of nutrition are most impaired, and thence may extend till at length we may suppose all the central portion suppurated, while the peripheral part may assume the character of a granulation layer, and form the proper wall of the abscess. Now we may be sure that the circumscribed portion of tissue in which such an abscess has its seat, degenerates, and is either absorbed or else disintegrated, so as to mingle more or less of its substance with the pus. At length, after extreme thinning of the integuments, they perish in the centre of the most prominent part, and the abscess bursts. The discharge is usually followed by a cessation, more or less complete, of the inflammation in the integuments, and then the abscess, the walls of which have the character of a cavity lined with healthy granulations, heals. The process of ulceration is probably very analogous: its beginning is usually the detachment of a slough, or portion of dead tissue, by the removal of the layer of living tissue that bounded it. The spreading of an ulcer, independently of visible sloughing, is effected by the tissues that bound it becoming degenerate, and being detached in minute particles or molecular matter; or, being decomposed and dissolved in the fluid, discharge or ichor. As regards gangrene, one of the destructive effects of inflammation, we can only say that the probability of its arising is proportionate to the intensity of the inflammation, and the debility or defective vitality of the affected part, whether that debility have a general or local origin.*

There is one other point in the theory of inflammation, of so much importance as a guide in our treatment of it, that notwithstanding the length to which our extracts have already extended, we cannot omit calling our reader's attention to it. The circumstance to which we allude is, that the circulation of the blood in health or in disease is not solely dependent upon the impulse received from the heart, that is, upon the vis a tergo as it has been termed, but that both in health and in disease other influences must also be recognised which reside in the capillaries themselves. This doctrine has indeed been ably advocated for many years by Dr. Graves, of Dublin, but we doubt whether it has received all the attention which it merits. Our space will only allow of our quoting from his Lectures a few of the passages which he has adduced from Dr. Carpenter, in proof of this great physiological truth, and to cite Dr. Graves's own representation of the evils which have resulted from non-discernment of this principle.

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* Professor Paget, Lectures, i. ii. iii. iv. v. Medical Gazette, i. ii. 1850.

"No physiological fact," writes Dr. Carpenter, "is more clearly proved, than the existence in the lower classes of animals as well as plants, of some power independent of a vis a tergo, by which the circulating fluid is caused to move through their vessels. This power seems to originate in themselves, and to be closely connected with the nutritious and secretory processes, since any thing which stimulates these to increased energy accelerates the circulation, whilst any check to them occasions a corresponding stagnation. On ascending the animal scale, we find the power which in the lower organisms is diffused through the whole system, gradually concentrated in a single part; a new force, that of the heart, being brought into operation, and the circulation placed in a greater or less degree under its control. Still there is evidence that the movement of the blood through the capillaries is not entirely due to this, since it may continue after the cessation of the heart's action, may itself cease in particular organs while the heart is still beating vigorously, and is constantly being affected in amount and rapidity by causes originating in the part itself, and in no way affecting the heart." We can only adduce one of the many evidences in proof of this position. "Thus cases of spontaneous gangrene of the lower extremities are of no infrequent occurrence, in which the death of the tissues is clearly connected with a local decline of the circulation, and in which examination of the limb after its removal shows that both the larger tubes and the capillaries were pervious; so that the cessation of the flow of blood could not be attributed to any impediment, except that arising from the cessation of the same power which exists in the capillaries, and is necessary for the continuance of the current through them. The conclusion to which Dr. Carpenter tends, that the power possessed by the capillaries is not a mechanical result of their contractions on their contents, but is closely connected with the state of the nutritive and secretary processes, receives support from Mr. Draper's investigations on the same subject. It is explanatory also of what has been said of the retardation or stagnation of blood in the capillaries of inflamed parts, since, as he argues in another place, and Mr. Paget maintains in his sixth lecture, there is, during inflammation, an impairment, not an increase, of the functional activity of the solids."

"The physician and surgeon," writes Dr. Graves, "must study the life of each part, in attempting to estimate its morbid conditions. It was a want of proper knowledge on this subject which led to so many errors in practice. Among these I may mention the treatment of Egyptian ophthalmia, in which it was thought necessary to drain the patient of blood for the purpose of subduing a mere local inflammation. In truth, the treatment of local inflammation, whether affecting external organs, as phlegmon, carbuncle, erysipelas, or internal parts, as pleurisy, peritonitis, &c., can never be properly understood, until the older doctrines, which (by teaching that the vis a tergo was every thing in inflammation) led to a too general use of venesection, has been laid aside, and sounder opinions adopted."*

Inflammation is of two kinds, viz., the phlegmonous and erysipelatous. By the phlegmonous is to be understood an inflammatory circumscribed affection of the skin and cellular membrane, with a swelling rather prominent in the centre, and of a bright red colour, attended with pain and distension, and in which any effusion that happens to take place is usually converted into pus. By the erysipelatous is implied an inflammatory affection confined principally to the skin when seated on the external surface of the body, and to the mucous membrane when on the internal, with hardly any evident swelling, of a more or less vividly red colour, readily disappearing on pressure, but quickly returning again, not distinctly circumscribed, but shading gradually into the tint of the surrounding tissues, not fixed as to the extent of the parts affected, but often spreading or receding suddenly. The redness is accompanied with considerable heat, and gives rise to more or less of a burning pain; and vesications of various sizes are often observed to arise, and in the end the cuticle desquamates, and it is said that gangrene may take place; but we believe that neither gangrene nor suppuration is met with unless the erysipelas be combined with phlegmon. Such a combination does frequently occur in practice, constituting what has been denominated erysipelas phlegmonodes.

The more moderate the different symptoms are, the better is the chance of the inflammation terminating by resolution. When it does not readily yield to proper remedies, and is unusually obstinate, or deep-seated, there is reason to believe that it will terminate by suppuration. When the symptoms are very violent, even though the inflammation is of the erythematic kind, there will be reason to fear gangrene.

Resolution is always a favourable termination: suppuration is also favourable if the inflammation be external and the habit good; but in internal inflammations it is generally to be dreaded.

In forming an estimate of the degree of danger in any case of internal inflammation, it will be necessary to keep in view the nature of the organ attacked, the strength of the patient's constitution, and the length of the previous illness. Towards forming a just notion of the degree of danger, as well as of the necessity that may exist for employing prompt and active remedies, due attention must be paid to the previous history of the patient.

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* Graves's Clinical Medicine, pp. 486, 487. 489.

PHLEGMON.

This species of inflammation is occasioned by the application of stimulants, such as fire or burning; by external injuries, either bruising, wounding, over-stretching or compressing the parts; by extraneous substances which have lodged, and either by their form, bulk, or quality, produce irritation; by the application of cold; and by any thing that determines an increased impetus of blood to the part.

The chief seat of phlegmonous inflammation is the inner surface of the true skin, and the cellular substance contiguous to it, from which it extends to the adjoining parts of the cellular membrane and skin; so that the surface soon assumes a florid colour, the tumour, at the same time, extending both in depth and circumference. It comes on with an itching, dryness, redness, and increased heat and circulation in the affected part; which symptoms are shortly succeeded by a circumscribed tumour, through which shooting and throbbing pains extend. If the inflammation runs high, and is of considerable extent, then an increased action of the heart and arteries takes place; the pulse becomes full, hard, and quick; the skin dry and hot, and great thirst arises.

M. Begin, in the "Dictionnaire de Médecine et de Chirurgie Pratiques," says that custom has long limited the term phlegmon, synonymous in truth with inflammation, to that variety of it occurring in the cellular tissue, whether subcutaneous, or extending into the interstices of organs, or entering into the composition of the principal parenchymatous ones. These last inflammations, however, are not to be treated of under the head of Phlegmon, but reserved for separate consideration, in the articles which describe pneumonia, encephalitis, hepatitis, &c.

Phlegmonous inflammation usually terminates either by resolution, suppuration, effusion and adhesion, or gangrene. By resolution we are to understand the natural cure or going off of the inflammation by a gradual cessation of all the symptoms, the state and texture of the part remaining entire. By suppuration is implied the conversion into matter, or pus, of the serum, or coagulable lymph and blood which have been effused in the adjoining cellular substance, in consequence of which a cavity, termed an abscess, is formed. By gangrene is meant a commencing mortification, or intermediate state between the height of inflammation and sphacelus. Sphacelation implies the total loss of life in the part, an absolute derangement of its structure, and the abolition of all its functions. Gangrene seems to depend upon an extreme severity of inflammation, accompanied by complete stagnation of the blood in the capillaries of the part, and a loss of vitality of the whole tissue at once, which perishes from defect of nutrition.

When the patient is seized with reiterated shiverings; when the fever and inflammatory appearance decline quickly; when a heavy, cold, and dull uneasiness, instead of acute pain, is experienced in the part affected; when the most elevated portion of the tumour appears soft and white, while the rest has its redness increased; and when, at the same time, the surgeon can feel the fluctuation of a fluid, we may be assured that a termination in suppuration has ensued. The latter symptom, however, occurs only where the matter lies superficially; but a man endued with great nicety of touch may be able, in many cases, to detect the presence of matter, even when deeply lodged. In most instances, indeed, of this nature, the quick subsidence of all the inflammatory symptoms, the repeated rigors, and the sense of weight and coldness in the part, are the only obvious appearances; but the patient being afterwards attacked with emaciation, nocturnal sweats, and other hectic signs, very clearly point out that there is a hidden collection of matter.

The symptoms which denote the termination of inflammation in incipient mortification are, first, a sudden diminution of the pain and sympathetic fever; secondly, a livid discolouration of the part, which, from being yellowish, becomes of a green hue; thirdly, a detachment of the cuticle, under which a sanious fluid is effused; and fourthly, the swelling, tension, and hardness subsiding, while, at the same time, a crepitus is perceived on touching the part, owing to a generation of air in the cellular membrane. The term gangrene has been applied to the disease in this stage; but when the part has become black and fibrous, and destitute of natural heat, sensation, and motion, it is denominated sphacelus.

In phlegmon our prognostic should be drawn from the symptoms which are present, as well as from the seat of the inflammation. If the inflammatory appearances cease suddenly, and blisters discharging a thin ichorous matter arise, while the part affected loses its sensibility and becomes of a livid colour, then a gangrene will certainly ensue. On the contrary, a gradual abatement of the inflammatory symptoms by a termination either in resolution, or a suppuration where proper pus is formed, may be regarded as prognosticating a favourable event. This remark holds good, however, only with respect to external suppurations, as internal ones are always dangerous, and not unfrequently fatal.

In the incipient state of a phlegmon it will always be proper to attempt the cure by procuring a resolution of the tumour, if possible; and therefore an early attention should be paid to the removal of the cause which has excited it, as likewise to the correction of the phlogistic diathesis, either of the whole system, or of the particular part which is affected.

If the inflammation has proceeded from a lodgment of some extraneous body, such as a bullet discharged from any kind of firearms, or has been occasioned by a thorn or splinter of wood, &c., the foreign body ought immediately to be removed, and, if necessary, the wound must be dilated to such a size as to admit of its being got out with as little force or pain as possible.

In cases of local inflammation, the phlogistic diathesis may be obviated by a very spare diet, and drawing a proper quantity of blood immediately from the neighbourhood of the part affected, either by scarifications with the aid of cupping-glasses, or by the application of several leeches, which will be the preferable way if they can be procured. The flow of blood is to be promoted by linen cloths dipped in warm water, and renewed as soon as they cool: but in internal inflammations, it will be advisable to draw blood from the system by opening a vein, taking care to proportion the quantity drawn off to the age and strength of the patient, as well as to the severity of the symptoms.

With a view of obviating the phlogistic diathesis, we may likewise have recourse to purgative medicines. In inflammations of any of the external parts of the body, as likewise in those of the head and chest, a frequent use of purgatives will be attended with a good effect; but in a similar affection of the bowels, purgatives should be administered with great caution or not at all. Emollient laxative clysters deserve a preference.—See ENTERITIS.

To assist these means, and terminate the inflammation by resolution, if possible, it will be right to make use of some discutient application, as remedies of this nature are, in some mild cases, of themselves sufficient to disperse an incipient phlegmon. In cases of violent contusion or fracture, where a considerable degree of tension prevails, a poultice of rye-meal, or crumbs of bread moistened with the liquor plumbi acetatis, properly diluted with water (viz. eighty drops of the former to about a pint of the latter), will be a very proper application; and this may be renewed twice or thrice a day, until the swelling and inflammation subside; but in a common phlegmon, or where the part is so tender and painful as not to be able to bear the weight of a poultice, we must be content to apply pieces of soft linen moistened in some sedative application.* It is to be understood, however, that these remedies are to be applied cold, whether we use poultices or wet pledgets, and that they are to be renewed as often as they become stiff, hard, or warm.

The application of cold is indeed one of the most powerful means which we possess for abstracting heat and subduing inflammation; and it has been carried so far in some instances, that pounded ice and snow have been employed for the purpose. When these are not to be obtained, we may substitute, as a refrigerant, pieces of soft linen moistened in a solution of the nitrate of potass and muriate of ammonia in water, or even in simple cold water; but they are to be renewed frequently.

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* ℞ Liquor Ammon. Acetatis,
Aquæ Distillat.
Alcohol, āā f. ℥ij. M.

Vel,

℞ Ammon. Muriat. ʒj.
Acid. Acetic. Dilut. f. ℥ij.
Spirit. Camphoræ, f. ℥j.
Liquor Plumbi Acetat. ♏xvj. M.

Ft. lotio.

* Take Solution of Acetate of Ammonia,
Distilled Water,
Rectified Spirit, each two ounces.
Mix them, and use them as a wash.

Or,

Take Muriate of Ammonia, one drachm.
Distilled Vinegar, two ounces.
Camphorated Spirit, one ounce.
Solution of Acetate of Lead, sixteen minims.
Mix them for a wash.

In some cases of phlegmonous inflammation, particularly that which attends compound fractures, swelled testicle, &c., the pain is often so violent as to deprive the patient of his natural rest. Now the existence or aggravation of pain will often be an indication that our local applications are not suited to the particular case. Where they are likely to benefit, they will give some present ease. If local bloodletting has been carried as far as seems requisite or warrantable, and the continued application of cold be attended with an increase rather than diminution of pain, we see in this circumstance reason for trying the soothing effects of warm fomentations or poultices, before having recourse to opiates, to allay an evil which is probably, in part at least, of our own producing. We think that the augmentation of local pain is both primarily a sign, and secondarily a cause, of accruing injury, far greater than any countervailing good that we can hope to effect by perseverance in the use of cold applications.

When the cause of pain has resisted our repeated and varied efforts for its removal, but not till then, we may have recourse to opiates in order to dull the sensibility of the patient, and to procure sleep or rest. The dose should be considerable, as from thirty to forty minims of laudanum for an adult, an hour or two before bedtime, and half as much may be again given at an interval of three hours, if the first portion has then produced no effects. It is very seldom expedient to administer opiates to children at the breast.

When the inflammatory symptoms run so high as to affect the system, it is not unusual for a febrile disposition to prevail. In such cases we may order some febrifuge medicine to be taken every three or four hours, combined with the nitrate of potass.*

If, notwithstanding these means, the tumour should show an evident tendency to suppurate, we are then to resort to warm emollient cataplasms, which ought to be renewed three or four times a day. For this purpose there is none better, and few so good, as the common poultice made with crumb of stale bread and hot water, in such a way that it may be very smooth, soft, and

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* ℞ Potassæ Nitrat. ʒss.—ʒj.	* Take Nitrate of Potass, from half a drachm to one drachm.
Aq. Fervent. ℥viij.	Hot Water, eight ounces.
Antimon. Tartarizat. gr. ss. ad gr. j.	Tartarized Antimony, half a grain to a grain.
Syr. Violæ, ʒij. M.	Syrup of Violets, two drachms.
Ft. mistura, cujus sumat cochl. ampla ij. pro dos.	Mix them, and take two tablespoonfuls for a dose.

moist; and it should be comfortably warm, but not scalding hot, when applied. It should not be contaminated with oil or other grease. The newly invented spongio-piline, dipped in water of a proper temperature, and from time to time squeezed and redipped, will in some instances form a clean, convenient, and economical substitute for poultices. Camomile flowers, marshmallow leaves, and poppy heads, may be used for fomentation by such as have faith in them. Flannels or lint, with warm water, will probably do as well for the sceptical. In every case an outer covering of oil silk will retain warmth and moisture at the point desired, and promote the patient's comfort by keeping him dry elsewhere.

In inflammatory tumours, which are slow in suppurating, stimulating poultices, composed of onion, garlic, galbanum, or ceratum resinæ, mixed with the white of an egg, and the common poultice, may possibly forward the suppuration. Warm plasters of galbanum, or pix abietina, applied to slow suppurating tumours, sometimes prove useful; and they have this advantage over poultices, that they do not prevent people from doing their ordinary business.

It is often useful in these cases, after having cleansed and moistened the surface of these indolent inflammatory tumours, to rub the whole surface lightly over with a stick of lunar caustic. This process occasions little or no pain, but is followed in an hour or two by complete blackening of the parts, and subsequently by desquamation of the cuticle. After this has taken place, the same treatment may be repeated, if necessary. By these means the redness, heat, and swelling, are often considerably abated. At a later stage, and even when suppuration has taken place, a plaster of ammoniacum, with mercury, applied so as to cover the whole swelling, and retained in its place by means of a bandage causing gentle and equal pressure, is also useful in promoting the discussion of the tumour.

When the suppuration is completed, and the tumour is become very soft to the touch, and is near the surface, it is to be opened, either with a lancet or a trocar, in the part which is most dependent, care being taken to press the matter perfectly out; after which the wound is to be kept open with dry lint, and a pledget spread with the ceratum resinæ to be laid over all. It is desirable to bring the sides of the abscess in contact, and for this purpose gentle pressure should be made, either with adhesive plaster or rollers; but while this is attempted, we must be careful not to obstruct the escape of the matter; and much dexterity is sometimes required for the attainment of these two objects, namely, the gradual approximation of the walls of the abscess, and the maintenance of a free discharge. Where the abscess is large, and the secretion of pus considerable, it will be necessary to support the patient with bark or quinine, and a liberal allowance of wine, porter, and nourishing food.

In very large abscesses, particularly in that of the psoas muscle, it has been found a judicious practice to evacuate the matter by means of a seton, or by a flat trocar in a canula; which is to be insinuated between the skin and cellular membrane for some space, and then to be plunged in a slanting direction down into the abscess, leaving the canula and withdrawing the trocar. The orifice in the skin and deep-seated parts, by this means will not be in a direct line, and the severe constitutional symptoms which are apt to arise from the exposure of an extensive cavity to the air, are thereby avoided.

Genuine pus usually occurs as a rather thick fluid, viscid, but capable of separating in drops somewhat like cream, of a whitish yellow, yellow, or greenish yellow colour, and of a faint, but not disagreeable animal odour. When mixed with water it sinks rapidly to the bottom, but on stirring it forms an emulsive fluid, from which a sediment of pus globules is soon again deposited.

When examined under the microscope, pus appears (like mucus) to consist of a clear fluid, in which small, round, and occasionally oval corpuscles are swimming, the quantity of which seems to depend on the thickness of the pus. The fluid in which the corpuscles swim is transparent, yellowish, and very albuminous, so that on the application of heat, it becomes perfectly white, and deposits innumerable flocculi of coagulated albumen. This large amount of albumen distinguishes the fluid of pus from that of mucus; and the former from the latter secretion.*

Should phlegmonous inflammation threaten to terminate in gangrene, or already have shown symptoms denoting such a termination, we are then to endeavour to stop the progress of the mischief, and promote the speedy separation of the dead parts from the living. To effect this, it was formerly customary to make slight scarifications, and afterwards to apply warm antiseptic fomentations and poultices: but modern practitioners, particularly Mr. Bell and the late Mr. John Hunter, have highly disapproved of this mode of proceeding, and recommend a reliance to be placed on a liberal use of the bark of cinchona, together with a nutritive diet, and such a quantity of wine as will be sufficient to keep up the pulse. To give energy to the system, to maintain vitality in the inflamed parts, and to lessen the morbid irritability in them, are the objects which we should keep in view in all cases of gangrene.

In cases of gangrene arising from external injury, and exposing the life of the patient to danger, Mons. Larry† strongly advises that amputation should be performed, without waiting the appearance of the line of separation between the living and dead parts.

Where gangrene arises from debility, opium frequently proves useful: and as it by no means counteracts the effects of the cinchona bark, it may be given along with it: indeed, opium will prove generally beneficial, and particularly in that variety of the complaint in which no previous inflammation existed, but which is accompanied by violent pain.

The efficacy of the bark of cinchona is in every instance indeed much increased by its junction with opium in these affections, and therefore they cannot be too early employed in the curative plan of treatment conjoined together. Where the cinchona disagrees with the patient, or disgusts him from the large doses necessary to be taken, we may substitute the sulphate of quinine in any of the forms mentioned under the head of Intermittents.

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* Simon's Chemistry, ii. 86, 87.

† See his Mémoires de Chirurgie Militaire.

By modern practitioners we are instructed to keep the parts cool, and that all applications to them ought to be cold instead of warm, as was formerly practised. As an application to parts in a gangrenous state, there can be none better than a poultice made by stirring into an infusion of malt (such as may be readily obtained from the ale or porter-brewers) as much oatmeal as is required to make it of a proper thickness, and afterwards adding about a spoonful of yeast.* In applying it, due care must be taken not to bind it on too closely, as the fermentation, a short time after its application, will be considerable, and its bulk of course so increased, as to put the cloths and bandages which confine it very much on the stretch.

The cataplasma carbonis (which is prepared by mixing two ounces of wood charcoal, reduced to a very fine powder, with half a pound of the common farinaceous poultice) is another application which has lately been much used in gangrenous cases, as well as in sweetening fetid ulcers, and disposing them to granulate favourably.

Besides these applications, the lees of port wine, and the dregs of beer and porter, made into a poultice with a due quantity of meal, are likewise useful applications, as is also the carrot poultice. These may be tried in succession, in cases of failure. For the purpose of stimulating gangrenous parts, applications containing turpentine are sometimes of use, as a lotion of equal parts of turpentine and oil.

Where there is debility attendant on gangrene, a slight stimulus should be employed; but when there is excessive action, all stimuli had best be avoided. The best application to produce a slight stimulus, and check the gangrene, in Sir Astley Cooper's opinion†, is the nitric acid. Fifty drops of it to a quart of distilled water will be found a most useful remedy. The acid may be increased to one drachm, as it occasions pain or not, but in general the average strength is fifty drops. It has been observed, that, in a short time after this application, a quick separation of the parts from sloughing (to which there is always a tendency) takes place, and healthy granulations spring up of a beautiful florid red. Oiled silk should be applied over the linen, wetted with the lotion, so as to prevent evaporation and preserve the moisture for several hours. By a use of the nitric acid, the offensive smell arising from the gangrenous parts is nearly removed. Common nitre, in the proportion of one drachm to a pint of water, is another excellent application to gangrenous sores of this kind, and has the same effect with the nitric acid, although in a diminished degree.

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* This is the Cataplasma effervescens of the Pharmacopœia Chirurgica.

† See Lectures of Sir Astley Cooper, by Mr. F. Tyrrel, p. 191.

When the diseased parts slough off, dry lint is to be laid on the wound, with a pledget of the same spread with digestive ointment applied over all.

The local applications must be aided by constitutional remedies, and the best medicine we can administer is opium combined with ammonia. About ten minims of tinctura opii, with ten grains of sesquicarbonate of ammonia in an ounce and a half of camphor mixture and a little of the compound tincture of cardamoms, will make a draught, which may be repeated three times a-day. At the same time the patient must be well nourished, and have as much food as his digestive powers will bear: port wine in due quantity should be given also, and spirits may be allowed to those persons who have been much addicted to the use of such liquors.

In gangrenous affections of the toes and feet, Mr. Pott* very much disapproves of all stimulating applications, and in their stead recommends soothing and emollient ones, and this with a view to avoid exciting pain. Nevertheless, we have witnessed the good effects of lint dipped in oil of turpentine applied to the foot in one case of gangrene arising from ossified arteries, and of the kind therefore referred to by Mr. Pott.

It seems almost superfluous to observe, that it is necessary to obviate the effect of the opium on the intestines by a frequent use of some mild laxative or emollient clyster, so as to procure one or two evacuations daily.

In this species of mortification, Mr. Pott reports he found the cinchona bark had little or no influence; but that opium in large doses, frequently repeated, proved an effectual remedy in many cases. To give the patient every possible chance of recovery, it will be best, I think, to administer both. Wine should also be liberally supplied.

It sometimes happens, particularly in military hospitals, when the wards are much crowded, and the air contaminated to a high degree with putrid miasma, that sudden and rapid mortification is apt to attack all the wounded who are lodged in such wards, and that several individuals die, notwithstanding the application of the curative means and treatment successfully resorted to in the other species of gangrene. The term hospital gangrene has, therefore, been applied to this species of the disease.

Dr. Boggie, a recent author on Hospital Gangrene, which he witnessed in Spain during the Peninsular War, assigns as the causes of its production in healthy wounds, a high temperature, inattention to cleanliness, stimulating food, intemperance, and motion, or mechanical irritation. From one, or a combination, of these causes, a wound becomes gangrenous, and the morbid matter from this wound may by contact, or by charging an ill ventilated room with noxious gases, cause a similar disease in others.*

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* See his Chirurgical Works, pp. 799, 800.

Mr. Cæsar Hawkins, in a clinical lecture on this subject, when discussing the causes of hospital gangrene, arrives at the conclusion that it is sometimes epidemic, on the ground that several cases were simultaneously brought into St. George's Hospital of independent origin. He conceives it proved, however, that the disease is capable of spreading, as a consequence of the peculiar emanations from the sores themselves poisoning the atmosphere, but that this mode of propagation may be prevented in well ventilated wards. Farther, he thinks that the disease is contagious, if care is not taken to avoid the foul secretions being conveyed from one patient to another. But to the question, whether there is any proof that hospital gangrene is usually conveyed in either of these ways, that is, by both infection and contagion at one time, or by either of them exclusively, he would say decidedly not. And again, he reverts to the fact of three cases having been admitted into St. George's in the preceding January, with the disease already existing, admitted too from various parts of the town and country, a general tendency to the disease being also shown by its occurrence at the same time at St. Bartholomew's Hospital.

This author describes three forms under which destruction of parts may take place in a wound or ulcer.

The first form he designates as phagedenic ulceration, in which there is a removal of parts by ulceration without sloughing, the ulcer having a jagged edge, and a surface not smooth, but both it and the margins being uneven and irregular; the ulcer being generally superficial, but sometimes deepening in proportion to its surface.

The second is the gangrenous ulcer, in which there is no distinct well-marked ulceration; but the surface becomes covered with a black or dark brown slough, the margin of the skin to the distance of perhaps one third or half an inch black and dead, and the cellular tissue adjoining infiltrated with serum, swollen and puffy, and the surface of the skin for some distance around the ulcer of a dull livid hue. The next day, perhaps, a farther line and deeper surface of slough is seen, and thus the ulcers go on rapidly increasing in size and circumference, with great loss of substance from death of the infiltrated parts, with an exceedingly fetid discharge. One peculiar form, he adds, may be called the painful gangrenous ulcer, occurring chiefly in low prostitutes on the nates, but independent of syphilitic taint, appearing very deep in consequence of the great swelling and elevation of the edges.

The third form is the sloughing phagedæna, which is marked by a combination of the two former varieties; there is some ulceration and some sloughing, and the ulcer spreads rapidly in a few days. The last two forms he considers as constituting hospital gangrene.

The treatment adopted consisted in giving opium and ammonia, with brandy, and good diet, while the sore continued in a sloughy state. If the tongue be loaded, a saline mixture, with an excess of five grains of sesquicarbonate of ammonia, and opium in the form of Dover's powder, is the best mode of administering these; and the food, though light and nourishing, should not be solid, till the tongue has cleaned under the occasional use of some warm purgative, as rhubarb in aromatic water. When the state of the tongue warrants the use of tonics, bark, with ammonia, is reckoned among the best. In that form of gangrene, which has been alluded to as the painful gangrenous ulcer, opium is pre-eminently useful and necessary, and is required sometimes in very large doses; and in all cases of hospital gangrene attended with great pain and constitutional irritation, this drug must be our main stay for combating these symptoms, the dose being only limited by the attainment of the object in view. Mr. Hawkins remarks generally upon the recommendation of bleeding by military surgeons, that he had never seen a case requiring it, or one in which the patient was not weak, not always bearing stimulants, but yet weak; and he looks upon this depression as the chief predisposing cause of the disease. To this question in general treatment, we shall presently return, conceiving as we do, that they who have seen the disease only as it occurs in our civil hospitals are scarcely competent to judge of what may best suit its altered character when attacking the more vigorous inmates of camps.

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* Observations on Hospital Gangrene.

If the ulceration be purely phagedænic, or if it be attended with but little sloughing, and is painful, soothing applications are the best. Thus, a drachm of extract of hemlock to a pint of Goulard's lotion, is a good form, to which, if the pain be severe, sixteen minims of Scheele's prussic acid may be added; sometimes plain, cold, or tepid water answers best. If the ulcer be more of a sloughy character, stimulants often rouse the vessels to a healthier action, and so do good. The Peruvian balsam may be used, or the compound tincture of benzoin, and they must be thoroughly applied so as to come in contact with every part of the surface; the unguentum elemi compositum, mixed with balsam of copaiba, may be employed. A stale beer poultice acts in the same way. Great advantage is sometimes obtained from a chlorine lotion made of one part of the strong solution to fifteen of water, which often stops the disposition to slough, and corrects the fetor. In moderately sloughy sores, charcoal poultice or port wine poultice may be useful, but they are now far less used than formerly. Among escharotics to be employed in the severest examples of hospital gangrene, an almost universal preference is given by surgeons to the strong nitric acid. In this the present author concurs, and he objects to arsenic as too dangerous; a very valid objection, considering that it is in no respect superior to other agents. Nitrate of silver alone is not sufficiently powerful; whether the addition of this substance, or of nitrate of mercury, to the nitric acid, increase its efficacy in hospital gangrene, we have no means of judging; both these mixtures, however, have been successfully employed as escharotics in other diseases. Caustic potash, in substance or strong solution, has also been employed, but we doubt whether it is as manageable as the acid; while the actual cautery, perhaps on account of the alarm that it inspires, has found little favour in this country. It is for the arrest of rapidly spreading gangrene, by the destruction of the whole surface next to the gangrenous textures, that these means are resorted to, and whatever the agent employed, it is essential that the whole of the sore be touched, so that the whole of the living part beneath may be affected by it; and when the slough separates, if there be any part left with a disposition to slough, the acid must be re-applied. When the tendency to gangrene has ceased, the ulcers may be treated according to general rules.*

As regards the mode of applying the acid, Mr. Welbank, according to Mr. S. Cooper, recommends that the undiluted acid be at once applied, if the disease be not far advanced, after cleansing the surface with tepid water, and absorbing the moisture with lint. Where, however, there is a thick and pulpy slough, it is better to remove as much of it as possible with forceps and scissars before the application is made. The surrounding parts being then protected by a thick coating of lard or cerate, I proceed, he says, to press steadily, and for some minutes, a thick pledget of lint, previously immersed in the undiluted acid, on every part of the diseased surface, till it appears converted into a firm and dry mass. The parts may be then covered with simple dressings, and evaporation kept up by cooling lotions. As the application usually occasions more or less pain for an hour or two, from twenty to thirty minims of laudanum may be given at the time of using it. It is always prudent, often necessary, to remove the eschar at the end of sixeeen or twenty hours.†

It were a pleasing belief, if it were rationally admissible, that this scourge of former times, and of our Peninsular armies, had altogether disappeared from amongst us: but the occasions for the excellent lecture from which we have borrowed so copiously, prove that it is not altogether extinct in our best-regulated civil establishments; while the medical records of the last war show that it may still be rife in our military hospitals. Thus we find Dr. Moore narrating that the disease had been on the decline since the 1st February, 1846, in the hospital at Ferozepore, which nevertheless contained forty-seven privates and non-commissioned officers under treatment for this gangrenous condition of their wounds; while, subsequently to the 10th, few of the recent wounds received in the action of Sobraon escaped its influence. Among the occasional symptoms occurring in this author's experience, was the sloughing away of the coats of the arteries in the seat of the disease in four cases, followed by profuse hæmorrhage; while the sloughing of the superficial and deep-seated veins took place in several instances, giving rise, in one at least, to troublesome hæmorrhage. The especial purpose of Dr. Boggie's recent republication is to advocate bleeding and other antiphlogistic measures as the general mode of treatment of the peculiar form of gangrene in question; and he adduces in favour of it, that his newly-adopted practice became general, the benefit resulting from the change having soon become apparent, the great mortality having almost immediately ceased, and amputation, previously often performed, having become unnecessary. "Those who trust chiefly to local remedies in this disease," he writes in another place*, "and who disregard the constitutional symptoms as being of secondary importance, and those also who consider the accompanying fever to be always of a typhoid type, object strongly to the use of the lancet, and say that they have sometimes found it to do incredible mischief. To this I answer, that if bloodletting be used indiscriminately in this disease, there can be no doubt that it will often disappoint the practitioner, and be productive of mischief. At Bilboa, after bloodletting had been acknowledged to be of the greatest benefit in those cases to which it was really applicable, the remedy was brought into discredit by being used in cases where it was evident beforehand that it must be injurious." It appears, then, that even so zealous an advocate as Dr. Boggie does not consider venesection as of universal application; and Dr. Moore, in speaking of the disease as observed recently in India, says, that in its constitutional treatment, the type of the attendant fever was the chief index in regulating the adoption of antiphlogistic or non-antiphlogistic measures. On it depended the employment of venesection and active purgation; or the opposite, the tonic stimulating plan of treatment. We have nothing to add to what we have already said of the method of carrying out the latter plan. The cases suited to active depletion seem to be especially those in which the disease has recently attacked those but lately received into hospital; and in these, guided by the pulse, Dr. Moore did not hesitate to bleed to twelve or sixteen ounces, and to repeat the operation on the following day to the same extent, where the state of the pulse still indicated the measure. Five grains of antimonial powder and as much calomel were given after the first bleeding, followed after some hours by a dose of senna and salts. A fourth of a grain of tartar emetic, with five minims of laudanum, were given in water every third hour after bleeding and purgation had been adequately practised, and the diet was restricted to tea, water, gruel, and toast.† Probably this may be regarded as sufficiently active depletion in the most sthenic examples of the disease, to be lowered in severity as the aspect of the malady is farther removed from the highest standard, till we arrive at that point where, its character being essentially changed, that of the treatment must be reversed also. There is far less difference of opinion regarding the local than the general treatment: the former has been already sufficiently described; the authors just cited seem to have done good service in showing that the latter should be adapted to the varying aspects of the disease. Removal of the patient from the seat of its prevalence when practicable, avoidance of over-crowding, free ventilation, perfect cleanliness, and wholesome nutritious food, are each and all entitled to attention. The chlorides of soda, lime, or zinc, or chlorine in weak solution, may be employed for the destruction of stench, and possibly of infection also.

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* Medical Gazette, iv. 1847, p. 1024. *et seq.*

† Cooper's Surgical Dictionary, 1838, p. 767.

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* Observations on Hospital Gangrene, 93.

† Medical Gazette, iv. 1847, pp. 452, 453.

Carbuncle (Anthrax) is a phlegmon, which seldom suppurates perfectly, but discharges a thin acrid humour, and exhibits symptoms of approaching sphacelus. It often proves fatal when it takes place on the head, and frequently so when the neck is the seat of the disease. A generous diet, with a liberal use of wine and bark, in combination with snake-root, together with opiates to alleviate pain and procure rest, will be the best internal remedies in this complaint.

"With regard to the local treatment," says Mr. S. Cooper, "the principal thing is to make an early and free incision into the tumour, so as to allow the sloughs and matter to escape. If the carbuncle be large, a crucial incision is mostly preferred, because the compact mass of disorganised cellular tissue will be long in getting out unless the opening be made very free. The extremities of each cut should go two or three lines beyond the boundaries of the disease.

"Until the tumour is opened, no applications are more proper than an emollient poultice; but after the opening has been made, the poultice should be made rather stimulating, like that composed of oatmeal and port wine, the common fermenting poultice, or a linseed one, with which a proportion of Peruvian balsam has been blended. Poultices are to be continued till all the sloughs have separated, and must be changed many times a day.

"When the cavity has become clean, it may be dressed with red precipitate ointment."

ERYSIPELAS, OR ST. ANTHONY'S FIRE.

Erysipelas is a spreading inflammation, characterised by a red colour of the skin, with swelling of the subcutaneous cellular tissue, commonly ending in resolution and desquamation, sometimes in suppuration, seldom in gangrene. Bullæ are often observed, occasioned by the separation and distension of the cuticle by serum over portions of the inflamed surface; but we conceive that these are neither essential features of the disease, nor influential in determining its severity or course.

It sometimes happens that the inflammation extends to the cellular membrane beneath the skin, whence a real phlegmon and collection of matter become joined to the erysipelas, which combination has been denominated erysipelas phlegmonodes; but this is mostly the case where there has been a previous scratch or injury of the skin.

Every part of the body is equally liable to erysipelatous inflammation, but it more frequently appears on the face, legs, and feet, than any where else, when seated externally; and it occurs oftener in warm climates than phlegmonous inflammation.

"The predisposing causes," according to Dr. R. Williams, "are age, mechanical or chemical injuries, certain articles of diet, the existence of disease, or any debilitating cause. The effects of age in predisposing to erysipelas are considerable: new-born children are said to be occasionally affected; but from that period till adult age it is seldom witnessed. The period of life most liable to its attacks is from twenty to forty." In hospital practice, where a patient labouring under this complaint had been admitted into a ward, we have ourselves seen it pick out, and attack, every one of the brewers' men, to the number of six, who were at the time patients in that and the adjoining apartment, while the rest, amounting to four times as many, escaped altogether. This observation seems to indicate the powerful predisposition produced by that shattered state of constitution so often existing in free livers such as these. It may also be received as evidence of the infectious nature of the disease, in reference to which the author just quoted remarks, that "the spread of erysipelas has been so frequently observed, that no doubt can exist of its being infectious; and there is much reason also for believing it to be contagious."

If erysipelas be at all prevalent, the slightest mechanical injury will often produce the disease, as the puncture of a vein in bleeding, the bite of a leech, or a simple division of the integument, especially of the scalp. A particular state of the atmosphere seems sometimes to render it epidemical.

It seems connected likewise with that peculiar condition of the air which occurs in hospitals and crowded ships of war, where there is a defective or ill-regulated system of ventilation.

The contagion of erysipelas is capable of coexisting with many other poisons. It was formerly not an infrequent accompaniment of small-pox, and in fever hospitals it is often present.

In mild cases, where it attacks the extremities, it makes its appearance with a roughness, heat, pain, and redness of the skin, which becomes pale when the finger is pressed upon it, and again returns to its former colour when the pressure is removed. There prevails likewise slight febrile indisposition, and the patient is rather hot and thirsty. If the attack be mild, these symptoms will continue only for a few days, the surface of the part affected will become yellow, the cuticle or scarf-skin will fall off in scales, and no further inconvenience will perhaps be experienced: but if the attack has been severe, and the inflammatory symptoms have run high, then there will ensue pains in the head and back, great heat, thirst, and restlessness; the part affected will slightly swell; the pulse will become small and frequent; and about the fourth day a number of little vesicles, containing a limpid and in some cases a yellowish fluid, will arise.

The period at which the vesicles show themselves is very uncertain. The same may be said of the duration of the eruption. In mild cases it often disappears gradually. In some cases it continues for twelve or fourteen days, or longer, without showing any disposition to decline.

The trunk of the body is sometimes attacked with erysipelatous inflammation, but less frequently so than the extremities.

When erysipelas attacks the face, it comes on with chilliness, succeeded by heat, restlessness, thirst, and other febrile symptoms, with a drowsiness or tendency to coma or delirium, and the pulse is very frequent and full. At the end of two or three days a fiery redness appears on some part of the face, and this at length extends to the scalp, and then gradually down the neck, leaving a tumefaction in every part the redness has occupied. The whole face at length becomes turgid, and the eyelids are so much swelled as to deprive the patient of sight. When the redness and swelling have continued for some time, one or two blisters of different sizes, containing a thin transparent liquor, arise on different parts of the face.

No remission of pyrexia takes place on the appearance of the inflammation in the face; but, on the contrary, it is increased as the latter extends, and both will continue probably for the space of eight or ten days. In the course of the inflammation, the patient sometimes sinks between the seventh and eleventh days of the disease. When the complaint is mild, and not marked by a fatal event, the inflammation and pyrexia generally cease gradually, without any evident crisis.

If the disease arises in a gross habit of body, occupies a large extent of surface, and is accompanied with much constitutional derangement, we may suppose the patient is exposed to imminent danger. The fever assuming the typhoid form; the inflamed skin becoming of a dusky colour; livid vesications; great prostration of strength; and a weak, rapid, irregular pulse, are to be viewed in a very unfavourable light. Erysipelas never terminates in suppuration, unless combined with some degree of phlegmonous inflammation, which is, however, sometimes the case; but in a gross habit, the vesications are apt to sphacelate, in which case there will also be great danger. When the febrile symptoms are mild, and unaccompanied by delirium or coma, we need not be apprehensive of danger.

Where the disease has occupied the face, and proves fatal, inflammation of the brain and its consequences are to be met with in dissections.

Mr. Lawrence draws the following distinctions in his observations on the nature of erysipelas. "When inflammation affects the surface of the skin, which is red, not sensibly swelled, soft and without vesication, it is called erythema. Simple erysipelas is a more violent cutaneous inflammation, attended with effusion into the cellular substance, and generally with vesication. Phlegmonous erysipelas is the highest degree of the affection, involving the cellular and adipose membrane as well as the skin, and causing suppuration and mortification of the former."[*]

Great diversity of opinion has prevailed among the practitioners in medicine concerning the mode of treatment to be adopted in erysipelas; some pursuing the same antiphlogistic plan advised in phlegmonous inflammation, others, again, disapproving of all evacuations, and treating it as a disease dependent on irritability.

In the late Dr. R. Williams's "Elements of Practical Medicine" will be found a good review, both of the arguments by which the practice of bleeding has been recommended, and the results which have attended that practice. He has arrived at the conclusion that the weight of argument and of authority is against those who advocate the principle of bleeding; and, what is most important, experience seems to be against them too, for even their own results do not support their theory. Our own opinion, formed in an extensive field of observation, is, that in London at least, and probably in other large towns also, the subjects of erysipelas are generally such as will not bear large depletions of any kind; that the disease, however actively inflammatory it may at first appear, tends to assume rapidly a typhoid character, as evinced by the black dry tongue, and muttering delirium; and that stimulants are early needed, and must soon be freely given, in order to secure the safety of the patient. In simple erysipelas we rarely bleed, never from the arm; and our belief is, that in all forms of the complaint, local depletion by leeches, or punctures, or incisions, is that which is most likely to be beneficial; while in the case of the last method, it should be remembered that it may be carried out with a fatal boldness.

In those cases where the fever and inflammation run high, diaphoretic medicines will be proper, and they may be given conjoined with the nitrate of potass, as advised in phlegmon, or as directed under the head of Inflammatory Fever. Mild diaphoretics[†], with plentiful dilution, may form part of the early treatment, but must not be persevered in too long.

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[*] Medico-Chirurgical Transactions, xiv. 2.

[†] ℞ Misturæ Camphoræ, f. ℥j.	[†] Take Camphorated Mixture, one ounce.
Liquor. Ammon. Acet. f. ʒiij.	Solution of Acetate of Ammonia, three drachms.
Vini Antimon. Tartarizat. ♏xv.	Wine of Tartarized Antimony, fifteen minims.
Syrup. Simpl. f. ʒj. M.	Syrup, one drachm.
Ft. haustus, quartis horis adhibendus.	Make them into a draught, to be taken every four hours.

In those cases where the head and face are affected, and coma prevails, the semicupium, together with sinapisms applied to the feet, will be highly advisable. The application of a blister between the shoulders may assist in affording relief towards the close of the disease.

It is not uncommon to apply some dry mealy powder, such as starch, oatmeal, or chalk, to the inflamed surface; but probably external applications, such as a cold spirituous lotion, that reduce the heat of the skin, might be employed with greater advantage.

Some prejudices have indeed long existed against the use of cold applications in erysipelas. Cooling lotions have nevertheless been employed in this disease with great advantage. I have myself frequently recommended linen cloths wetted with a cooling lotion of equal parts of the liquor ammoniæ acetatis and water, or of muriated ammonia dissolved in water, with the addition of a little vinegar and camphorated spirit, in erysipelatous inflammation, with much benefit and relief to the feelings of the patient, when the application of farinaceous powders has seemed rather to aggravate than to soothe his sufferings.

Nitrate of silver has been a favourite remedy in the hands of Mr. Higginbottom, of Nottingham, who introduced it into notice as a local application in many cases of superficial inflammation. At one time he used the lunar caustic in substance, passing it lightly over the skin, previously cleansed with soap, and then moistened with pure water, not only wherever the inflammation existed, but even for some distance beyond this boundary, say for an inch all round. More recently he has used a lotion consisting of four scruples of the nitrate, and six minims of nitric acid in half an ounce of distilled water, and with this he forms first a line of circumvallation around the inflamed part to prevent the advance of the enemy, and then brushes over the whole surface within this line. We apprehend that in both these ways considerable pain and vesication would be produced; and we conceive that the severity of the remedy would in a majority of instances outrun the exigencies of the case. We have ourselves employed a weak solution of nitrate of silver, containing one or two grains to the ounce as a lotion, to be constantly applied by means of lint or linen to the affected parts; but while it appears to possess no evident superiority over cold evaporating washes, the spoiling of sheets and bedding which result from its indelible stains is a circumstance not to be entirely overlooked or disregarded. The most recent of what may be called the repellent local means is the application of collodion, the thin and contractile film deposited from which is designed to give support to, and to compress the distended capillary vessels, and so to give relief on the same principle on which pressure by means of bandages has sometimes been resorted to. If ten ounces of pure nitrate of potass in powder be mixed with fifteen ounces of the strongest sulphuric acid, and half an ounce of dry cotton wool be immersed and stirred in this fuming mixture for three minutes, we shall obtain gun-cotton suited for our use. This, at the expiration of the time just mentioned, should be removed by means of glass or earthenware rods, and transferred into a non-metallic vessel full of water, and washed repeatedly with fresh water till it is entirely freed from acid. When this has been effected it is next to be dried, and much of the water may be squeezed out by pressure in the hand, and more by compressing it between folds of dry cloths, and the remaining moisture must be expelled by the air, aided by a very moderate heat, much short of that of boiling water, since it is ascertained that this last is sufficient to cause its explosion. Collodion is then formed by placing one drachm of the dried gun-cotton in fifteen drachms of sulphuric ether, and adding one drachm of rectified spirit. It should of course be kept in well closed vessels, and may be applied by means of a camel's hair brush. Sufficient time has not yet elapsed for enabling us to judge whether its use be recommended by its merits, or solely by its novelty. All these restringent applications seem to us, though in different degrees, open to the same objection as cold washes, but we do not deem it valid with regard to any of them.

A short time ago a change came over the fancy of many practitioners, and whereas cold and caustic had been employed, masks of spongio-piline wrung out of warm water were seen covering the faces affected with erysipelas. We think that the feelings of the patient should not be disregarded in determining the continuance of cold or warm applications, but believe that the former will be generally found more agreeable and efficacious. Equal parts of lime-water and rose-water, with about so much rectified spirit as makes an eighth of the whole, is rather an elegant form, in which at times the liquor plumbi diacet. dilut. may be substituted for the lime-water.

Pure creasote is recommended by one physician, Dr. Fahnestock, of Pittsburgh, U. S., as a local application in every form of erysipelas, and is stated, when brushed over the whole affected surface and a little beyond it, to effect a cure at once of the simpler forms, with no other aid than that of a brisk purgative of calomel and jalap. The phlegmonous erysipelas requires repeated applications, but in no case is the skin permanently marked. It is said that the creasote is not pure unless it produce an immediate whiteness of the skin with which it is brought in contact.*

We ourselves know nothing of this remedy, and, indeed, trust mainly to the constitutional treatment.

The bowels should at the commencement be emptied by some brisk purgative, after which it will be enough to procure a moderate action by means of occasional laxatives.

According to our experience it will become necessary, even at an early stage, to substitute a tonic and stimulating treatment for the mild diaphoretic one before pointed out. With this view some vegetable bitter, as the compound infusion of gentian, should be given three or four times a day, with about five grains of sesquicarbonate of ammonia, the alkali having, as we think, a specific and beneficial effect in this, and many other cutaneous inflammations. Bark, too, has had many advocates, and may be given in powder, to the extent of a drachm, thrice a day or oftener; or, which we think better, eleven drachms of the decoction with one of the tincture, may be administered with the same frequency; or again, a pill containing two or three grains of quinine, and one of capsicum, or ginger, or camphor, may be tried instead of either of these. The state of the pulse, which is often rapid and feeble, and the condition of the tongue, which is apt to become black and dry, furnish the criteria by which we judge of the propriety or necessity for administering these remedies, irrespectively of the condition of the surface, and in despite of the presence of delirium. Wine, too, and other stimulants, and nutritious drinks, as strong beef-tea, should at the same time be freely given. The delirium is for the most part more akin to that of delirium tremens than to that of phrenitis, and is not aggravated by stimulants. Not unfrequently, too, like the delirium in fever, it may be allayed by opiates; the patient's condition being much improved by the calm induced and the rest procured by the administration of eight or ten grains of Dover's powder at bed-time.

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* Medical Gazette, vii. 1848, p. 1109.

If, however, we suspect that there is any inflammatory affection of the brain mixed up with a congestive one, we should not fear to apply a few leeches behind the ears, or a blister to the neck for its relief. We know that neither the one nor the other is likely to produce any mischief in respect to the cutaneous inflammation. We have here described the treatment which we have ourselves pursued, and have seen in many dangerous cases of the disease affecting the face and head to be followed by a successful issue. We give also, and in his own words, that simpler plan which Dr. R. Williams declares that, after a considerable number of experiments, he found the best. "The mode, then, in which I am in the habit of treating idiopathic erysipelas, whatever may be the part affected, or with whatever symptoms it may be accompanied, is as follows: — the patient is put on a milk diet, the bowels gently opened, and from four to six ounces of port wine, together with sago, allowed daily. This mode of treatment it is seldom necessary to vary throughout the whole course of the disease: for the delirium, if present, is generally tranquillised, if absent, prevented; the tongue more rarely becomes brown, or only continues so for a few hours. In a word, all the symptoms are mitigated, and the course of the disease shortened. I have pursued this system for several years, and hardly remember a case in which it has been unsuccessful."*

Erysipelas phlegmonodes is a species of inflammation which, we are informed by a late writer*, is very prevalent in the British navy, and ascribed by him chiefly to the nature of the diet of sailors, and the sudden alterations of temperature to which they are exposed. Its active influence is found more especially directed to the reticular or condensed cellular substance, forming the muscular aponeurosis, although it often primarily affects the skin, and is thence communicated to that membrane. When pus is formed, it more frequently appears beneath the aponeurosis in contact with the muscles, and generally destroys that membrane rapidly. It has, however, been found occasionally to commence in the periosteum, detaching that membrane and insulating the bone. A peculiarity in the plan of treatment recommended by the surgeon alluded to, consists in making free incisions with a scalpel on the inflamed surface, down to the muscles, previous to any secretion of pus having taken place.

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* Morbid Poisons, i. 284.

Such are the means to be employed when erysipelas happens to be combined with phlegmonous inflammation. When it arises in advanced life, or a weak, delicate habit, assumes the typhoid character, and is accompanied with symptoms of irritation, such as depression of strength, a quick, small pulse, &c., to take off the irritability, and guard against a termination in gangrene, which sometimes ensues, we should give the bark of cinchona, sulphate of quinine, mineral acids, snake-root, camphor, aromatic confection, and wine. In those cases where the disease is confined to the trunk and extremities, and where there is considerable pain and irritation, the employment of opium seems advisable: indeed, I have used it on such occasions seemingly with much advantage.

Where a tendency to mortification becomes apparent, the above medicines, with wine and other antiseptics, will be the more necessary, together with stimulant lotions containing camphor, externally applied.—(See PHLEGMONOUS INFLAMMATION TERMINATING IN GANGRENE.) Ammonia joined with aromatic confection may be given internally, with some probability of advantage, in all cases of erisipelatous inflammation of the extremities or other parts, which threaten to terminate in gangrene. When erysipelas is accompanied with a tendency to the worst kind of hæmorrhage, from being of a malignant nature, alum and the sulphuric acid are particularly indicated.

If erysipelas is mild, and unaccompanied with febrile symptoms, it will be sufficient to keep the patient within doors, without confining him to his bed.

In those cases where the inflammatory symptoms run high, the diet should consist of light nourishing things, such as preparations of barley, sago, tapioca, rice, Indian arrow-root, panado, and the like; and his drink should be lemonade, tamarind-beverage, or barley-water acidulated with some vegetable acid; but in those cases where symptoms of irritation prevail, a more generous diet, such as animal broths, and a moderate use of wine, ought to be allowed.

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* See Surgical Observations, by Mr. A. Copland Hutchison.

Erythema is characterised by nearly a continuous redness of some portion of the skin, with a slight elevation of the surface, speedily subsiding. The accompanying symptoms are very slight, and the disease is not contagious. It occurs principally in the months of June and July, and is most frequently met with in women. In that species of it denominated erythema nodosum, the eruption is generally confined to the fore-part of the leg, and appears under the form of large oval patches, which run parallel with the tibia, and rise into painful protuberances, somewhat resembling nodes. It is usual for the eruption to subside in ten or twelve days, leaving the patient languid. Mild aperients, succeeded by a use of the mineral acids, prove efficacious for its cure.

PHRENITIS, OR INFLAMMATION OF THE BRAIN AND ITS MEMBRANES.

Phrenitis is an acute inflammation of the parts contained in the cavity of the cranium, and may affect either the membranes of the brain, or the brain itself, or both, which is the most common case. It is called primary, or idiopathic, when it exists independent of any other disorder; and secondary, when it arises in consequence of some other disease, as fevers. In warm climates, it appears to be sometimes produced by excessive fatigue under exposure to the intense rays of a vertical sun, and often proves quickly fatal in such cases.

The characteristics of phrenitis are vehement pyrexia, severe pain in the head, redness of the face and eyes, intolerance of light and sound, extreme restlessness, watchfulness, early and violent delirium.

"In the best-marked cases of active inflammation within the cranium," says Dr. Alison, "such as bear evacuations best, and are most generally and decidedly benefited by them when used early, and carried to a due degree, the first symptoms are fever of various degree, with sharp, shooting pain of head, impatience of light and sound, sickness and vomiting, and great aggravation of the uneasy feeling on assuming the erect posture. The pulse is firm, often peculiarly sharp, but seldom very frequent, and in some cases, almost from the beginning, it is slower than natural."

"If these symptoms are not quickly relieved by remedies, one or more of the following soon show themselves, marking more distinctly, although variously, that the texture of the brain, and of the organs of sense and voluntary motion, has been somewhere injured:— delirium, generally attacking in sudden fits, or, instead of delirium, partial and temporary loss of recollection; spasm, likewise, usually sudden and violent; dilatation of pupil, squinting or blindness, more or less complete; paralysis, generally partial, sometimes temporary; and drowsiness or coma, sometimes general and profound, sometimes incomplete, or graduating into mere absence of mind and inattention to surrounding objects. These symptoms are attended by characteristic but somewhat various changes in the pulse, most generally by slowness or irregularity, followed by extreme rapidity."

It is so important that inflammatory affections within the head should be recognised during their earliest stages, when alone, if ever, they may be relieved by treatment, that, at the risk of being tedious, we shall discuss their symptoms at some length, although most of the distinguishing features are mentioned under the head of Simple Continued Fever. We shall not attempt to establish an absolute diagnosis between phrenitis and continued fever, but shall point out the particular symptoms which belong to one or the other, so that, in individual cases, it may be determined on which side the weight of probability preponderates.

Now distinct rigors and subsequent chilliness, as precursory symptoms, are more appropriate, we think, to fever than to phrenitis, and the same may be said of a loaded tongue, of the sensation of thirst, and of the loss of appetite at the commencement. The heat of surface is more diffused in the former than in the latter disease, being considerable over the whole body in the former, manifesting itself especially about the head in the latter case. The sense of debility and the appearance of languor are greater; the headache is less constant and urgent in fever than in phrenitis.

The urine in typhus is diminished in quantity; it is acid in the earlier part of the disease. It varies extremely in colour; the red tint of inflammatory urine is, however, very seldom observed, but more commonly a brown, or reddish-brown colour. The urea appears diminished, and the uric acid increased, in their relative quantities.

On the other hand, the headache of phrenitis is of more constant occurrence, and is usually more severe than that of fever; yet no degree of severity, and no peculiar character, and no especial seat mark the pain as arising from phrenitis. It may even be wanting altogether; a fact explicable in part upon the well-known insensibility of the substance of the brain, but in part to be accounted for only on some other principle, most probably, we think, dependent upon the gradual manner of the attack. The production of pain in diseases of the substance of the hemispheres, manifestly results, as stated by Dr. Todd, from the morbid irritation extending to other parts with which nerves are connected, as the medulla oblongata, or to which nerves are distributed, as the membranes. Hence the nearer a cerebral lesion is to the membranes or the medulla oblongata, the more likely is it to excite pain.

But Andral has distinctly shown that not only the substance of the brain, but the membranes themselves, may be the seat of inflammation without the production of pain. And we find it stated at p. 46. of the translation of his "Clinique Medicale," that the diseases of the membranes, during which no headache was observed, differed neither in their nature nor in their seat from those in which pain of head was one of the symptoms. And if this can be said in reference to the total absence of pain, it is no less true with regard to its varying degrees of intensity.

Uncomplicated cerebral inflammation does not give rise to, and has no necessary connection with, depraved secretions, such as commonly exist in fever. The tongue may be clean, and the alvine secretions natural; or, if the former deviate from a state of health, though it may have a white furred appearance, it has seldom the thick mucous coating occurring in disorders of the intestinal canal, nor are the fauces apt to be clogged with mucous secretions. If the motions be scybalous, or on the other hand loose, or otherwise diseased, they are not apt to be ochrey, or streaked with blood, or slimy.

There are some particulars to be noticed in reference to the vomiting often existing in cerebral disease. First, it is to be remarked of it, that it is preceded or accompanied with less nausea and retching than attends primary irritation of the stomach. There is a simple inverted action, causing an ejection of some of the contents, but little or no straining; and this slight effort occasionally takes place when no food or drink has been taken for some time. Another circumstance peculiar to the vomiting in cerebral disease is, that in it the stomach seems to have lost its ordinary discrimination, often rejecting mild and bland articles of diet, and retaining nauseous and powerful purgatives. It seems, indeed, as if a powerful impression were more likely to insure its tolerance, than one that is more feeble. The condition of the bowels varies considerably; generally they are confined; they may be regular, and not unfrequently we have known them to be relaxed: but, whatever their condition prior to treatment, they resist the influence of cathartic medicines; nay, in the last case, we have known them, shortly after the exhibition of a strong purgative, to be less relaxed than before.

These assistances of diagnosis derived from the modifications of vomiting, are much more available in disease occurring in children than in that affecting adults; but they will sometimes assist us in the latter case also.

Disturbed sleep, in which startings occur, or from which there are sudden wakings in terror, or with a scream, has long been known as a premonitory symptom, if, indeed, it be not the actual commencement, of cerebral disease. A not very limited experience has convinced us that in children at least, these indications are rightly referred to the brain, and that they are rarely, if ever, produced by abdominal disease. The fact of the patient voiding his urine in his sleep, has seemed connected with the same tendency; at least we have known it commonly cured by measures of depletion directed to the head. Under the same circumstances, frequent sighing, grinding of the teeth, and a contraction of the brow, are ordinary symptoms.

Dr. Bence Jones, in the 30th volume of the "Medico-Chirurgical Transactions," has noticed a peculiarity in the urine voided in inflammations of the brain, as contrasted with that passed in delirium tremens. A considerable increase of the phosphates excreted occurs in the former class of cases, and a most marked diminution in the latter. These results cannot be considered as established, being founded only on a small number of experiments; still less certain is it that this increase of phosphoric acid in the urine can be taken as a means of distinguishing phrenitis from other diseases, or marking its supervention upon them; yet there is probability enough of some aid being thus afforded to warrant our directing attention to it. For appreciating the quantities of phosphoric acid present, the urine should be rendered slightly alkaline with ammonia, and then a few drops of a solution of hydrochlorate of lime added to it. We shall thus ensure the precipitation of the whole of the phosphoric acid in combination with earthy bases, and its quantity may be estimated from that of the deposit obtained.

Whatever the manner of attack in phrenitis, which may be either sudden and violent, or gradual and insidious, the first period of the disease is marked by varying degrees of excitement, evinced, it may be, by convulsions, violent delirium, and sleeplessness, with augmented sensibility to light and sound, and general restlessness and irritability; and this stage may be of varied continuance, from several hours to a few days; after which the second stage, or that of hebetude and coma sets in, and this gradually increases up to the fatal close. The pupil is no longer immovably contracted, but now it is dilated and insensible, or nearly so. And this dilatation and insensibility may affect the two eyes unequally; while very commonly there is some degree of squinting also. The coma becomes gradually more profound, clammy sweats break out, respiration becomes more labouring and oppressed, and at last ceases.

The appearances discovered after death are some of the following: — Effusion of lymph, or concrete pus, or turbid serum on the membranes of the surface, or in the ventricles of the brain.

Red softening of a portion of the cerebral substance.

Yellow softening, or softening with diffuse purulent infiltration of some portion.

The formation of a circumscribed abscess in some part of the cerebral matter.

Induration of the substance of the brain is regarded as a result of chronic inflammation, and the same may be said of thickening of the membranes when it occurs. White softening, or that which takes place without manifest alteration of colour, is often a result of deficient nutrition of the brain. We have known it, however, to be found affecting the fornix and septum lucidum, and co-existing with effusion into the ventricles in acute cases, in which we could not doubt its inflammatory origin.

The causes which give rise to idiopathic phrensy, are such as directly stimulate the membranes or substance of the brain, or increase the impetus of the blood in its vessels: hence violent fits of passion, great uneasiness of mind, intense study, excessive venery, severe exercise, external violence of any kind, such as blows on the head, concussion, fissure or fracture, an immoderate use of vinous and spirituous liquors, a long-continued exposure to the heat of the sun, and the suppression of accustomed evacuations, as hæmorrhois, menses, issues, milk drying up, &c., may be regarded as the remote causes. Many acute diseases, particularly continued fever, and some of the exanthemata, may give rise to phrenitis. Original conformation, or hereditary predisposition, often operates as a predisposing or even an exciting cause of it.

Phrenitis is distinguished from mania by the quickness of the pulse, and the attendant pyrexia and pain in the head; and from fever by the character of the delirium, and by other circumstances detailed above, or in the article on Simple Continued Fever. The prognosis must be generally unfavourable.

On the first coming on of idiopathic phrensy, immediate recourse should be had to bleeding, the quantity drawn off being proportionate to the age and constitution of the patient, and to the severity of the symptoms. The orifice which is made with the lancet should be large, and the patient, if possible, ought to be placed in an erect posture. The blood drawn off is usually buffy and cupped upon cooling. Opening the jugular vein or temporal artery may be preferable to drawing blood from the arm, and taking away a considerable quantity at once will certainly be better than drawing off only a little at a time, and repeating the operation frequently. Thirty or forty ounces of blood taken at one operation will more decidedly stop the progress of the disease than sixty or eighty drawn off by driblets of twelve or fourteen ounces at a time. A man who in a state of health would faint from the abstraction of a pound of blood, will, when an inflammatory diathesis is present, suffer the loss of two or three pounds, without any, or with but trifling inconvenience. If the patient is much reduced by the largeness of the evacuation, and the disease nevertheless still continues violent, the application of several leeches to each temple, or behind each ear, will be more advisable than any repetition of bleeding from the system. When leeches are not to be procured, blood may be abstracted by means of a cupping-glass and scarificator.

The next proper step to be taken, will be to apply a large blister to the neck or between the shoulders. Linen cloths wetted with vinegar and water, cold spirituous lotions, diluted ether, iced water or ice enclosed in a bladder should be kept constantly to the temples and forehead; and they should be re-wetted as often as they acquire the temperature of the scalp. Topical cold over the head, by a wet towel or other like medium, the hair having been previously shaven, will, indeed, in many cases, prove more efficacious than the application of a blister, as this has been observed occasionally, not only to accelerate the pulse, but likewise to render the patient more unmanageable. Cold affusion, by directing a stream of water over the head, is also a valuable remedy; its effects, however, must be watched by the medical attendant.

With a view of obviating the inflammatory diathesis, and of diverting the humours from the head, a strong purge* may be ordered; and this ought to be repeated every second or third day during the continuance of the complaint. Purgatives of the saline kind are good antiphlogistics, and may be prescribed as well as others. In all inflammatory affections of the head, a copious discharge from the intestines will be found highly beneficial; experience has indeed ascertained that venesection itself is often less powerful. To assist in diminishing the determination of blood to the head, the patient should be kept as nearly in the erect posture as can be done.

Warm bathing of the lower extremities, and the application of rubefacients to them, for the purpose of revulsion, have been very generally employed in idiopathic phrenitis.

In other particulars, an antiphlogistic treatment should be pursued; hence saline medicines, with moderate doses of antimony, as gr. $\frac{1}{12}$ or $\frac{1}{8}$, and about five drops of tincture of digitalis, may be given three or four times a day, by which we may often promote the secretions both of the skin and kidneys. We consider it rarely safe, and never necessary, to give digitalis so as to control the action of the heart; while we do not hesitate to give antimonials, notwithstanding their nauseating tendency, in cases where the vomiting is sympathetic. They will be found to calm the stomach if they abate irritation within the head, just as by facilitating expectoration in catarrh, they will often stop the vomiting which follows severe paroxysms of coughing. These are points upon which some physicians of eminence appear to us to have fallen into error, directing treatment to the organ sympathetically, instead of to that primarily affected.

The specific action of mercury does not deserve a preference to the use of purgatives and the other means already indicated; but when these have been pushed as far as it is right or desirable, we should be disposed to give it a fair trial.

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* ℞ Hydrarg. Chlorid. gr. v. Pulv. Scammon. gr. xv.	* Take Calomel, five grains. Powdered Scammony, fifteen grains.
Fiat pulvis catharticus.	Make a cathartic powder.
Vel,	*Or,*
℞ Olei Tiglii, ♏j. Hydrarg. Chlorid. gr. ij. Extract. Anthemid. gr. ij.	Take Croton Oil, one drop. Calomel, two grains. Extract of Camomile, two grains.
Fiat pil. alternis auroris sumenda.	Make a pill, to be taken every alternate morning.

In the stage of coma, blisters to the shaven scalp, or to the back of the neck, are sometimes of service after the time for farther bloodletting and purging has gone by. But where free evacuations have been early practised, and there can exist a hope that the secondary phenomena (as is sometimes the case) may result from exhaustion, where the patient can be aroused to consciousness, and at all events where there is no squinting and no paralysis, then stimulants, as ammonia, mild nutriment, and tonics, will deserve a trial, and used with watchfulness and care will sometimes succeed.

If phrenitis arises in consequence of some suppressed evacuation or eruption, we must endeavour to restore it by the proper means, which will be understood from the nature of the former discharge.

During the whole course of the disease, the patient ought to be kept cool, and as quiet and undisturbed as possible, excluding light from him; and he should be closely and uninterruptedly watched. His food should be mild and nourishing, consisting of preparations of barley, sago, gruel, &c. Cold acidulated liquors should be allowed with freedom. In idiopathic phrenitis, every part of the antiphlogistic regimen will be highly necessary.

Chronic inflammation of the brain is by no means an uncommon state of disease. It occurs in some cases as a consequence of falls and blows on the head; but in general its origin is inscrutable. Death is usually preceded by a short period of coma. Could the nature of the disease be ascertained during life, the insertion of a seton in the neck, occasional topical bleeding from the temples by means of leeches, and regular purging, would seem to afford the only hope of relief.

DELIRIUM TREMENS.

A VERY singular affection of the brain and nervous system, known under the appellation of *Delirium Tremens,* sometimes is met with in practice; and as it might be confounded with phrenitis, it seems proper to notice its pathognomic symptoms. The characteristic symptom of this disease is sleeplessness, accompanied by a peculiar delirium, and often by tremblings and unsteadiness in the limbs. The tongue, when put out, is generally tremulous in those dram-drinkers who are its subjects, even before the supervention of a paroxysm, and the hand too is unsteady when held out, and this character marks also the gait. The pulse is generally frequent, sometimes extremely so, and if it be not so from the first, it soon becomes soft, feeble, and perhaps intermitting. We have seen the skin sometimes hot and dry at the commencement of the attack, but perspiration is easily produced, and is generally profuse during the progress of the malady. The delirium is peculiar; it has been well designated as bustling, an epithet very appropriate to the whole manner of the patient. There are almost constantly ocular delusions, at least we have never known them absent. It is common for the sufferer to fancy that he sees rats and mice on his bed, or in his room; another has been much annoyed by sparrows pecking barley; and yet another was troubled by a snake, and one saw the gin running from the tap. It is commonly easy for the attendant medical man to soothe the patient for a time, if he try gentle and persuasive means. Promises to be quiet are readily obtained, but they are forgotten and broken within a minute. Opposition and the use of force give rise to great irritation, and ought, as much as possible, to be avoided. Loss of appetite, especially for breakfast, and some degree of sickness and vomiting, particularly in the morning, are common as precursory symptoms, and may continue, more or less, during the seizure. The actual attack often follows upon a debauch of more than usual extent or duration, and we have known it ushered in by a fit of epilepsy. In some who are strongly predisposed by their intemperate habits, it follows upon some accident, or shows itself during the treatment pursued for the relief of some bruise or fracture. We have had one patient who was brought to us in a state of apoplexy from drinking, and, after recovery from this condition, was the subject of well-marked delirium tremens.

We are not of the number of those who would in all cases proscribe bleeding, but it must be resorted to only at the commencement, and with extreme caution, and is inadmissible except in the case of plethoric patients. Its adoption must be regarded rather as a rare exception than as the rule of practice. It may, however, in some cases, be beneficial, when carried to a moderate extent, during the continued excitement of recent great excess.

The indication which is to be pursued is to calm irritation and to procure sleep, and opium, in some or other of its various forms, is the remedy most entitled to our confidence. The tincture is the preparation which we have constantly employed, and believe to be the best. It must be given in free, and even in very large doses. We think that some advantage may arise from taking into account the natural time for sleep, giving only moderate doses by day, and greatly increasing them at night. In a case at present under our care, in which the disease was well marked, though not extremely severe, the bowels were freely opened by a purgative of calomel and jalap in the first instance, and a draught, containing fifteen minims of sulphuric ether and ten of laudanum, in camphor mixture, was given every four hours during the day. But it was directed that the opiate should be increased at night. A single draught, with fifty minims, were given at bed-time, and the patient procured some hours' sleep, since which his condition has much improved, and his rest has been good under the continued use of the draughts as first prescribed. Beef-tea, and porter to the extent of two pints a day, were allowed from the first, and on the second day four ounces of gin were given also. For regulating the quantity of stimulants to be taken, the former habits of the patient must be ascertained and taken into account. As the symptoms abate, both the narcotic and the stimulants may be gradually diminished in amount till the former is withdrawn, and the latter reduced within the limits of moderation or temperance. The treatment may terminate in the use of bitter tonics, as of hop, quassia, gentian, or cascarilla, or sometimes, where the system has become pallid and exsangueous, steel medicines, as the mistura ferri composita, may be given with advantage. It is common for patients to survive several attacks of this disease, and at last to sink under one of increased severity, or as a consequence of the greater deterioration of their constitutional powers. This may be expected to occur when they relapse into habits of intemperance, which is too commonly the case. Or they may fall victims to dropsy, resulting from the diseased condition of many important organs, especially of the liver and kidneys; or they may be unable to bear up against some accidental disorder or serious accident, from which sounder men might have recovered.

In the case, the treatment of which has been detailed, the symptoms were not severe, and the disease yielded readily. Had this not been the case, the fifty drops of laudanum would have been repeated to the third or fourth dose during the night, to be reduced to the first amount during the greater part of the day. We think that this plan has the advantage of giving greater effect to the drug at the period when the chance of success is greatest. In one instance, after two or three sleepless nights, the opium was omitted during the day, and a brisk purgative given in its stead, and sleep followed on the return to the narcotic at night. It must be sufficiently obvious that quiet favours sleep, but it is important to observe that darkness also assists our efforts to produce it; hence the room during the night should neither be filled by a multitude of attendants, nor illuminated by a profusion of lights. It should, as far as possible, be noiseless and dark. The general conduct of the attendants should be such as is required in those who wait on the insane. The patient should be soothed and humoured, and constantly watched, but as little as possible coerced. In this disease, as in the case of the insane, recourse to the straight waistcoat should be prohibited, as was long ago insisted on by Dr. Armstrong, in his excellent paper on the subject. The ground on which we have given occasionally a smart aperient is, that we might thereby produce a state favourable for the absorption of our remedy, and we think that in a few instances we have seen it promote that result. It may not always be either necessary or advisable.

There is a prescription which has obtained some repute for arresting the sickness of drunkards, either previous to, or during the existence of the disease of which we are speaking. In the latter case, the tincture of opium may be added to it. We have often tried it with good effect, and therefore give it below.*

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* ℞ Aquæ Pimentæ, ʒxj.	* Take Pimenta Water, eleven drachms.
Tincturæ Sennæ Comp. ʒj.	Compound Tincture of Senna, one drachm.
Aceti Scillæ, ♏v.	Vinegar of Squills, five drops.
Misce.	Make a draught.

We are not ignorant that many practitioners have substituted the use of the salts of morphia, as of the acetate and muriate, for that of the preparations of opium. Nevertheless, we have not met with any evidence, either theoretical or practical, to convince us of the superiority of the former; and we therefore still cling to the belief that the tincture of opium is, upon the whole, the best sedative that can be employed for allaying the peculiar irritability which is so apt to ensue upon the habitual excessive use of spirituous liquors.

It is to be remarked also that the administration of chloroform, in addition to the employment of narcotics, has been resorted to by some for the purpose of producing a temporary insensibility, which sometimes merges immediately into sound sleep; while at others a more or less continuous inhalation is required for obtaining the same result. Without questioning, however, the advantages which have sometimes resulted from this practice, we doubt whether the need is so crying, or the gain in the most favourable cases so decided, as to warrant a general or early resort to an agent, the deadly operation of which we are so powerless either to obviate or to correct. A very small proportion of deaths distinctly traceable to what has and may become unexpectedly a most fatal poison, is argument enough for great restriction of its use, if not for a total abandonment.

OPHTHALMIA, OR INFLAMMATION OF THE EYE.

Although the term ophthalmia, in its most extended sense, would include every inflammation occurring in the eye, whatever the part or texture affected, we propose here to consider more especially those forms in which the conjunctiva, or investing membrane which lines the inner surface of the lids, and is reflected over the anterior part of the globe, is primarily or principally concerned. For this limitation of our use of the term, we have the precedent and authority of Dr. A. Jacob, who commences an article in the third volume of the "Cyclopædia of Practical Medicine," from which we shall freely borrow, with the remark, that under the head of Ophthalmia it is proposed to consider inflammation of the conjunctiva only, although strictly speaking the term is more applicable to inflammation of the eye itself.

The chief varieties of the disease which we have now to discuss, may be included under the heads of catarrhal, purulent, and scrofulous, the second of which again admits of some sub-divisions. Thus purulent ophthalmia, whether sporadic or endemic, has been spoken of in separate sections, according as it appears of a character having the Egyptian ophthalmia for its type, as it arises in connection with gonorrhœa, or again as it occasionally appears in new-born infants. These three varieties of disease, as regards their progress, consequences, and the principles of their treatment, appear not to be marked by any very essential differences, so that it will be enough if we take a general view of them, noticing only such peculiarities as each may exhibit, and such modifications of treatment as may seem to be desirable.

Catarrhal Ophthalmia. — We quote from the article above referred to, an abstract of Mr. Lawrence's description of this disease, which with a few additions will convey to our readers such necessary information as it is compatible with our limits to supply.

It originates from atmospheric causes or peculiarities, is produced by exposure to cold, and corresponds to catarrhal affections of other mucous membranes. In individuals predisposed to this affection, being out in an east wind for a quarter of an hour, or half an hour, will sometimes infallibly bring on an attack. Dr. Mackenzie, in addition to causes of the above kind, mentions over exercise of the sight, as from reading or writing to a late hour at night. He states that it has occasionally prevailed epidemically, sometimes associated with influenza, and thinks it probable that it may be propagated by contagion.

The following symptoms are enumerated by Mr. Lawrence: — Stiffness, smarting, uneasiness from exposure to light, watering and external redness, followed by mucous discharge, without considerable pain or intolerance of light. The conjunctiva becomes of a scarlet colour, in mottled patches at first, but subsequently of uniform appearance, the redness commencing at the circumference and extending to the cornea. Sometimes spots of ecchymosis occur in the vascular network from the activity of the inflammation, and occasionally pustules appear round the margin of the cornea; but true chemosis never exists. Chemosis is defined by Dr. Mackenzie to be an inflammatory œdema of the cellular substance under the conjunctiva, by which it is raised from the sclerotica, so as sometimes to overlap the edge of the cornea, or even protrude from between the eyelids.

The characteristic sensation of a foreign body beneath the lid, Mr. Lawrence attributes to the irregularity of surface produced by vascular distension. The secretion from the surface is at first thin, but subsequently becomes of a thicker consistence and whiter colour, resembling pus, at first confined to the inner angle of the eye, or to the fold of reflection of the conjunctiva, but afterwards poured out in sufficient quantity to agglutinate the lids at night. These symptoms are accompanied by those of inflammation of other mucous membranes, and are found to remit by day, and to become aggravated at night. In catarrhal ophthalmia, according to Dr. Mackenzie, the patient is generally free from headache; whereas in the rheumatic, one of the most remarkable symptoms is supra-orbital or circum-orbital pain, severely aggravated during the night. Now as the rheumatic inflammation has its seat in the sclerotic coat, the absence of this pain may be taken as an evidence that that structure is not implicated in the particular case before us. The circumstance that the dilated vessels may be pushed aside, or moved on the surface of the globe, distinguishes inflammation of the conjunctiva from that of the sclerotica. Catarrhal ophthalmia, according to Mr. Lawrence, passes through a certain course, and then subsides; yields readily to treatment, and is, generally speaking, free from danger, unless improperly treated. It is distinguished from the severe purulent ophthalmia by its milder character; and although the appearances of the two approximate, yet there is a difference in degree if not in kind. To the same purport Dr. Mackenzie says of the contagious, purulent, or Egyptian ophthalmia, "this disease is essentially the same with that described in the last section (the catarrhal), only much more severe, and excited in a different way."

The former of these authors considers mild antiphlogistic treatment necessary, such as cupping and leeching in ordinary cases, and occasional venesection in full habits; an active aperient, sometimes an emetic, followed by saline and sudorific medicines, and diluent drinks. Locally, he recommends warm in preference to cold applications, but observes that the latter are sometimes comfortable to the patient, and not injurious; and he suggests the application of blisters after the inflammation subsides, and exposure of the organ to the air, objecting to shading the eye unless there be intolerance of light.

Dr. Mackenzie states that he very rarely finds it necessary, in catarrhal ophthalmia, to take away blood either from a vein or by leeches; yet that when there is more than ordinary constitutional irritation, the abstraction of from twelve to twenty ounces of blood from the arm will no doubt prove useful. He recommends a brisk dose of calomel and jalap at the commencement, and occasional doses of neutral salts during the course of the disease; while the action of the skin is to be promoted by a warm foot-bath at bedtime, by small doses of spiritus mindereri, or other mild diaphoretics, with diluent drinks; and counter-irritation is to be produced in severe cases by blistering at the back of the neck or behind the ears; yet these last are now rarely used. As a local application, he places great confidence in a solution of nitrate of silver containing four grains to the ounce, a large drop of which is to be applied to the eye, once, twice, or thrice a day, according to circumstances, by means of a camel's hair pencil. This causes some smart pain, commencing within a few minutes, continuing for perhaps ten minutes, then dying away and leaving the patient much easier than before. The relief lasts for five or six hours, when the symptoms return, and are to be immediately checked by another drop. As the disease subsides, the remedy gives less and less pain, till at last it is hardly felt. In some cases a stronger solution is to be employed. As a collyrium, a solution of one grain of corrosive sublimate, and six of hydrochlorate of ammonia in eight ounces of water, with two drachms of vinum opii, is used warm for fomenting the eyelids thrice a day, a little being allowed to drop into the eyes, or injected by means of a syringe, so as to remove the morbid secretions.

In addition to these means, a minute quantity of red precipitate ointment, softened by warmth, is to be smeared along the edges of the eyelids at bed-time. Others employ merely a little fresh cream or washed lard, with the same object of preventing agglutination of the eyes at night. As the nitrate of silver solution and the collyrium mentioned above are chemically incompatible, it is evident that they ought not to be used quite simultaneously, but that some little interval, as an hour or so, should intervene between their employment. It would probably be best, before dropping in the caustic, to cleanse the eye carefully with a little warm water.

Severe Purulent Ophthalmia. — We have already quoted authorities to the effect that this disease is to be considered as differing rather in degree than in kind from that just described. From having passed, says Dr. Mackenzie, along with the British troops from Egypt to this country in 1800, 1801, and 1802, it is often spoken of under the name of the Egyptian ophthalmia. It is generally believed to be contagious; indeed this author designates it as contagious ophthalmia.

The condition or symptoms, writes Dr. Jacob, in the article before referred to, which characterise the severer forms of conjunctival inflammation, or purulent ophthalmia, whether Egyptian, gonorrhœal, or infantile, are the chemosis or turgid vascularity, with effusion of serum into the subjacent cellular membrane, sloughing, abscess or ulceration of the cornea, and alteration in the structure of the conjunctiva, leading to granular lids, and vascular and opaque cornea.

The first appearance of inflammation, says Dr. Vetch, is observable in the lower eyelid. It assumes first a mottled appearance, and then a fleshy redness. A little mucus is generally present at the doubling of the conjunctiva at its lower part. Dr. Mackenzie speaks of a suppression of the mucous secretion of the conjunctiva of the eyelids as the earliest effect of the inflammation and the cause of the itching, which is one of the earliest symptoms of the disease. The disease may remain in this state for twelve hours or more before it invades the conjunctiva covering the eye; and in some cases, where the contact of the virus has been slight, or it has been removed by immediate washing, the disease has never gone beyond this production of redness in the lining of the palpebra.

The first stage of the disease may be characterised by great and uniform redness, without that pain, tension, or intolerance of light, which accompanies most other forms of ocular inflammation, exactly the reverse of which takes places when inflammation affects the sclerotic coat. From the beginning of the operation of the virus, there is a disposition to puffiness in the cellular texture between the conjunctiva and globe of the eye. This puffiness often suddenly swells out into a state of complete chemosis; and at other times it makes a more gradual approach to the cornea, advancing equally on all sides, the close attachment of the membrane at this part causing the swelling, as it were, to double over the margin of the cornea. The chemosis is sometimes so great that the conjunctiva of the eyeball projects considerably from between the lids. Œdema is at the same time going on beneath the integuments of the palpebræ, accompanied by livid redness and swelling of the skin of the eyelids, sometimes extending to a considerable distance round the eye, and often as sudden in its appearance as if it had been owing to the stinging of an insect. The swelling of the lids renders them almost immovable, and occasions at first a degree of inversion of their edges, but subsequently they are apt to become everted. With the accession of the external swelling, the discharge, which was before moderate, flows in a continued stream of yellow matter, diluted with the tears, and may amount to several ounces during the day, the smallest particle of which is capable of producing infection. The puriform secretion may continue without much change for twelve or fourteen days, or even a longer period. At length the chemosis begins to shrink, and the fluid secreted to diminish in quantity, and gradually to lose the characters of pus, and to become thin and gleety. The internal surface of the eyelids, the semilunar membrane, and caruncula lachrymalis, which were the parts first affected, are the last in which the disease disappears. Not unfrequently the internal surface of the lids remains in a sarcomatous state, from the papillæ becoming indurated, so as to form a granular, scabrous, or mulberry surface. This state has received the name of *granular conjunctiva*, and is a fruitful source of protracted mischief, rubbing against the cornea, and keeping up a chronic inflammation in its investing membrane, which becomes covered with red vessels, and loses in great measure its transparency. Such, says Dr. Mackenzie, in continuation, may be looked upon as a favourable case of this disease. We must be prepared to meet with much more destructive terminations of it. The tumefaction often hinders for a time our ascertaining the morbid changes which are going on in the eye, but when this abates it is sometimes found disorganised. The cornea may present itself in various states, turbid, but entire, burst in one or more points, almost entirely destroyed by suppuration, of a fleshy appearance, covered with fungous excrescences, or penetrated by numerous ulcerations, through which portions of the iris protrude. In some cases the primary inflammation probably extends to the surface of the cornea, and hence its epidermis becomes thickened, in some measure detached from it, and more or less opaque. Superficial ulceration also frequently attacks the cornea in the course of the disease, giving rise to opaque cicatrices and to adhesion of the iris even where there is no perforation.

In other cases the inflammatory process is still more severe, attacking its whole substance, and even extending to the internal textures of the eye. The patient is now subject to sharp lancinating pain deep in the orbit, aggravated during the night, and declining towards morning. There is also deep-seated, pulsative pain in the eye, coming on in paroxysms; in other instances continuing with scarcely any remission in its violence till the cornea gives way. It is only when the disease assumes its most violent form, that it is accompanied by the frequent recurrence of these paroxysms of pain, and under these circumstances the rupture of the cornea frequently takes place; an event which is almost always followed by staphyloma and loss of sight. Sooner or later, but at very various periods, one of these attacks of pain is terminated by a sensation of some rupture, with a gush of scalding water, succeeded by immediate relief to the eye in which this event has happened, but generally soon followed by an increased violence of the symptoms in the other. We do not find it distinctly stated that the ruptured edges of the cornea reunite, but this would appear sometimes to be the case, from the fact that the same causes which produced the first rupture continue to operate, so as to produce a second or a third. In some instances this rupture appears to result in the cornea, previously uninjured, from increased secretion of the aqueous humour within the eye. More generally, Dr. Mackenzie thinks, that ulceration, commencing on the surface and forming a groove or trench, causes or conduces to this result; and he speaks of infiltration of the substance of the cornea, constituting abscess, as its most frequent source; while, in some cases, a sloughing of the layers may give rise to it. In many instances the capsule of the lens gives way in a few hours after the bursting of the cornea; the lens itself escapes, and with it more or less of the vitreous humour of the eye, a small deformed eyeball only being left.* Such is the most violent form of the disease.

With some, the Egyptian ophthalmia lasts only nine or ten days; in others, the patients have suffered for months: and unfortunately there is no security, we are informed, against a new attack, even after a perfect recovery.

It is consolatory to know that in some of the milder cases, opacities of the cornea, which are considerable at the first subsidence of the disease, may so far disappear as but little to impair the vision.

The severity of the constitutional symptoms is by no means proportioned to the intensity of the local ones. We have seen that, at the outset, they are altogether absent, or very slight; at a later period, the acute pain and the interrupted rest produce some constitutional disturbance; but even then we are told that the pulse is often natural while the patient is in a recumbent position, though it is extremely excitable, becoming very rapid on his sitting up. There is seldom thirst, or loss of appetite, and the tongue may be white, but is seldom furred, and never dry; nor does the temperature of the general surface appear to be increased.

We have spoken of contagion as a cause of the propagation of this disease; it may fairly be doubted whether it is communicable by infection; but it seems probable that other causes may produce it, such as are enumerated as those of the less severe catarrhal form. Some peculiar local influence must be supposed capable of originating it, if the inference drawn from Dr. Vetch's example of the escape of two officers whose eyes were covered at night, while two others sleeping uncovered in the same tent were attacked, be confirmed by farther experience.

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* See Mackenzie on Diseases of the Eye.

It is said that the right eye suffers more frequently and more severely than the left; that the disease may be confined to one eye, but that it generally attacks both.

Dr. Jacob has well brought under review the dangerous consequences which the practitioner summoned to a severe case of this disease is to anticipate, and, if possible, to avert. Thus he says, that in the first, or inflammatory period, he must recollect that the eye may be lost by sloughing or abscess of the cornea, or by suppuration of the whole eyeball; in the second stage he has to apprehend the injury or destruction of the cornea from ulceration, or from that change of organisation of the conjunctiva which proceeds to permanent increased vascularity, and that peculiar condition denominated granular lids.

Treatment. — *Bloodletting.* — Both general bloodletting, whether from vein or artery, as well as local depletion by leeches and scarification, have in this disease, as in all others of an inflammatory nature, been carried to an extreme degree. The principles upon which such excessive depletions have been adopted, seem to us to have originated in very erroneous views of the nature of inflammatory action, and their consequences to have been pre-eminently disastrous. We cannot, however, enter here into any general discussion, but shall quote from two authors of acknowledged reputation, passages confirmatory of our opinions, to be found in those parts of their works in which they speak of the treatment of this particular disease. On this subject Dr. Mackenzie writes as follows: — "We ought neither to delay the abstraction of blood, if the symptoms are smart, and the case of some days' standing; nor ought we, on the other hand, to indulge in the absurd expectation that profuse bloodletting is to cure the disease completely, without the use of local applications. I hold any notions of this kind which some have entertained, as crude and irrational, and their practice as perhaps the most destructive which could be followed. By very profuse bloodletting the patient is too much reduced, and the eye rendered more susceptible of disorganisation." "If there be a vigorous circulation," says Mr. Tyrrell, "without disposition to other important organic disease or condition, as pregnancy, the force and volume of the circulation should be diminished by abstraction of blood from the arm; but only to such an extent as to produce the change mentioned, not to reduce the general power much below par. The effect thus produced on the circulation should afterwards be kept up by abstinence, purgatives, and quietude, and by frequent nauseating doses of tartar emetic or ipecacuanha." Farther on he says, that "if the general power is sinking too much, the nauseating medicines should be omitted, and a more nutritious diet be allowed." And again, speaking of the second stage of the disease, he tells us, "that when the chemosis is incomplete, the treatment already detailed should be put in force directly and energetically. I have never found it fail," he adds, "when promptly put in operation and carefully followed; whereas I have often seen it carried to an extreme degree when the chemosis has been complete, but unavailingly. Indeed, I am satisfied that the excessive depletion I formerly adopted and witnessed, has often tended to hasten the unfavourable termination of the disease."

If venesection is determined on, it should be practised from a large orifice while the patient is standing up, and to a considerable extent, as to twenty or thirty ounces, or even more, in robust subjects, so as to produce a marked impression on the circulation. It is an object, if possible, to bring on faintness; and it is desirable to trust to one, or at most two free bloodlettings, rather than to repeated smaller ones. In determining on bleeding from a vein, and fixing the amount, we must not forget the drain on the system to be subsequently made by numerous leeches, or free scarifications. Now these are necessary on account of their greater efficacy in unloading the vessels and parts involved, while their local effects are not obtained without a considerable depressing one on the system at large.

Mr. Tyrrell has described his treatment of a severe case of gonorrhœal ophthalmia, occurring in a young man, which will serve as a guide in practice. One eye only was affected, but in this the chemosis was complete, that is, surrounded the cornea in every part; a small spot of mortification was visible on the surface of the cornea, which was otherwise brilliant, and the lids were swollen, red, and tense. The disease had reached the second stage. The patient was seated upon a low chair, and the operator stood behind him so as to receive his head, when inclined backwards, against the lower part of his chest. "I then," says Mr. Tyrrell, "carefully, and with as little force as possible, elevated the superior palpebra, having the finger covered with a piece of fine linen to prevent its slipping (one of my pupils depressed the lower lid); next, with a fine cataract knife, I divided the conjunctiva and the subjacent cellular membrane from the margin of the cornea, in a direction between the attachments of the recti muscles, making two incisions in each of these positions, or eight in all. In passing the knife, its point was made to penetrate the membrane just over the junction of the sclerotic and cornea, and the back or blunt part of the instrument was opposed first to the cornea, and afterwards, as the incision was extended, to the sclerotic; and the chemosed part was divided from within to without. The chemosis was firm, the effusion being in great measure fibrinous. Immediately after the operation, the application of hot water by a sponge was freely made, and continued for ten or fifteen minutes; the part bled freely, the conjunctiva lost its bright carmine hue, and became of a pink colour, and somewhat flaccid, and the patient expressed himself relieved. Afterwards I directed him to be bled till the fulness and firmness of the pulse was subdued, but not to syncope (he lost about eighteen ounces of blood), and to take directly fifteen grains of cathartic extract, and two of calomel, with half a grain of opium, every six hours. He was to apply leeches freely to the palpebræ if pain recurred, and to bathe the organ frequently with warm poppy decoction. His diet was restricted to gruel, tea, toast and water, or soda water. Next day he was found much better. He had, in the interval, applied twelve leeches; he had enjoyed several hours good sleep, half reclined, as had been directed, and he was free from suffering. The secretion was thinner and paler, but still very copious; the tumefaction of the palpebræ had very much subsided, and their colour was purplish and dull. The same low diet was continued, and he was kept quiet in a darkened room; and in forty-eight hours after the division of the chemosis, the acute stage was annihilated, the calomel and opium was omitted, a moderate portion of animal food allowed, and a drachm of alum per pint was added to the poppy decoction, and he was to use a very weak preparation of citrine ointment (say half a drachm to an ounce of lard) to the lids at night. He only took a little mild aperient, and recovered rapidly under a gradual augmentation of these means (the solution of alum being by degrees increased in strength), and escaped with a small, dense, opaque cicatrix on the cornea, which did not interfere with vision."

In a case in which active depletion had been adopted, and the individual was salivated at the time of first consulting Mr. Tyrrell, while yet the disease was unsubdued, the chemosis was divided in both eyes, a nutritious diet was prescribed, and quinine given; and the alum dissolved in decoction of poppies was used from the first with great benefit.

The general rule of constitutional treatment is thus laid down by this author. "When the force of the circulation is greater than natural, with or without febrile excitement, I abstract blood, but merely to such an extent as to reduce the pulse a little below the ordinary standard. If the general power is much below what is proper, I immediately begin to promote its restoration by a good and nutritious diet, with some stimulus to which the patient has been accustomed, and frequently give also some tonic medicine. For twenty-four hours after the division of the chemosis, soothing treatment only is followed by means of poppy decoction, and a simple ointment to the lids. Leeches are applied to abate pain when present; and when this has disappeared, the wash is made astringent and the ointment slightly stimulating, and both are gradually increased in strength; and often it is good to vary them in kind. The operation is only repeated when, in consequence of extreme tension of the parts, it has been impossible to perform it adequately at first."

Others have practised scarification of the cornea, but by transverse or circular, rather than by radiating incisions, and the method here detailed appears far preferable.

Dr. Mackenzie recommends, after due, but not excessive bloodletting, both local and general, with moderate purgation and diaphoretic treatment, an alternation of soothing and stimulating applications. Indeed, he employs here, after depletion, the same solution of nitrate of silver as in the catarrhal form; and the same tepid solution of corrosive sublimate and hydrochlorate of ammonia for cleansing the eye. He advocates the use of calomel and opium till the mouth is sore, for the relief of circum-orbitar pain; and thinks blisters to the temples, behind the ears, or on the neck, highly serviceable.

In cases of ulcers of the cornea, much advantage, he thinks, is derived from the use of the lunar caustic pencil, sharpened to a point, and applied for an instant to the spot. Vinum opii, when the purulent discharge is gone, proves an excellent application to the relaxed conjunctiva.

Dr. Jacob insists upon the salutary effects, in this disease, of what he calls a meal of fresh air, and he quotes the following strong passage from Dr. Vetch. "I entertain so favourable an opinion of the effects of free exposure to the atmosphere, that although no person can better appreciate the importance of decisive measures in the early stage of the disease, I would in favourable weather risk the delay of a journey on foot, or horseback, or in a carriage, or a voyage by sea, provided the eye be freely exposed to the air."

It should be mentioned that Mr. Guthrie gives a preference to an ointment made with ten grains of well levigated nitrate of silver, intimately mixed with a drachm of fresh lard, as an astringent application to the turgid conjunctiva. General bloodletting having been premised, and the eye washed from discharge with alum water, a small portion of the ointment is to be softened by warmth, and inserted by means of the finger, and the lids are to be freely moved up and down, so that the whole conjunctiva gets its due proportion. This causes considerable pain, to be soothed by warm narcotic fomentations, while an alum wash of three grains to the ounce is to be injected from time to time to clear the eye. Calomel and opium are to be given till the mouth is sore; although by many the mercurial action is little trusted in, and we have recorded above one example of its total inefficiency.

Dr. Jacob prefers solutions of acetate of lead or alum as astringents, and uses them after moderate depletion in a saturated condition. He seems to think that in the first stage their employment might alone put a stop to the disease.

It will be seen from the above details that there is a pretty general agreement among eminent surgeons upon the principles upon which the treatment is to be regulated; the particular modes of carrying out those principles must vary in individual cases, and must demand for their selection the cautious deliberation of the medical attendant.

Gonorrhœal Ophthalmia.— Gonorrhœal ophthalmia, in its symptoms and course, seems to differ in no important particular from the disease just described. It is said, however, to be remarkable for its extreme severity, for the peculiarity of the inflammation, commencing generally in the conjunctiva of the globe rather than in that of the lid, and for the circumstance of its more commonly affecting one eye only. Thus Dr. Mackenzie says, "that whenever we see one eye affected with severe puro-mucous inflammation, the lids much swollen and of a livid colour, and the discharge copious, without any affection of the other eye, we may suspect the case to be gonorrhœal. Dr. Vetch," he adds, "speaking of the Egyptian ophthalmia, says, 'there is not one case in a thousand in which one eye only becomes affected.'"

The same author tells us, that this disease has been ascribed to inoculation with matter from the urethra; 2ndly, it has been supposed to be metastatic; and, 3rdly, it has been considered in certain cases as owing to irritation merely, without either inoculation or metastasis. He adds, that he considers the existence of the first kind beyond all doubt, that of the second and third as somewhat problematical. The treatment requires no separate account; in fact, Mr. Tyrrell does not separate this and the preceding form in his description of them.

A few words must be said of the treatment of that consequence of ophthalmia, the granulated lid, which is wont, by the irritation which it produces, to give rise to farther disease, keeping up a constant discharge and causing the cornea to become partially opaque, or, as it has been called, nebular. It seems agreed, notwithstanding the name which has been applied to them, that the small red projections on the conjunctival surfaces of the eyelids are not granulations, like those formed during the healing of an ulcer, but merely the natural villi of the mucous membrane inordinately augmented by morbid action. At times the enlarged villi are soft, flaccid, and spread out at their summits, the conjunctiva being much thickened. In other cases, with much less thickening of this membrane, the papillæ are extremely hard and pointed.

The treatment is to be directed to the correction of any impaired function or depraved condition of the general system which may be found to exist, in the first instance, and subsequently to invigorating it by means of tonic diet and medicines; and among these last, sulphate of quinine is highly esteemed. The measures to be employed locally are moderate bleedings, either by leeches or scarification, when the conjunctiva is found of a deep red colour, and very turgid, and the use of strong astringents intermediately, the solution of the diacetate of lead undiluted being the best; or the lids may be lightly touched with nitrate of silver, or sulphate of copper. Mr. Tyrrell considers the strong solution as particularly suited to the flabby form of enlarged villi; the touching with the sulphate or nitrate more successful in their hardened state.

Dr. Mackenzie directs the scarification and caustics to be employed alternately at intervals of two or three days. A change should occasionally be made in the astringent or caustic employed. Thus, a solution of alum may for a while take the place of that of lead, or the vinum opii be employed. Counter-irritation is to be kept up by repeated blisters behind the ear or on the temple. These means, when long continued, are generally successful, the condition of the cornea improving with that of the rest of the eye.

Ophthalmia of new-born Children. — The causes of this disease enumerated by Mr. Tyrrell, are, first, and most commonly, a morbid secretion from the mother, which comes in contact with the conjunctiva of the infant during its birth. Secondly, a specific purulent secretion of the mother (gonorrhœa), which acts in the same way. Thirdly, exposure to cold and damp; and probably also to other sources of local irritation, as to too great heat or light, or to dirt, soap, or spirits.

The disease, as arising from either of the first two causes, shows itself about or before the third day after birth, sooner and more severely when from the second than when from the first. If produced by the third class of causes, the complaint may be much longer delayed, and of far milder character. The disease in the infant, even when very acute, is said to have a less destructive tendency than when of seemingly parallel severity in the adult. Hence the cornea escapes from injury during a longer period, and more frequently escapes altogether. Mr. Tyrrell attributes this to the more lax connection of the conjunctiva over the junction of the sclerotic and cornea, so that a greater degree of chemosis is requisite to arrest the circulation of the corneal portion of the membrane.

Another circumstance to be noticed is, that the granular conjunctiva is not a sequela of the malady in the infant. As regards the treatment, Mr. Tyrrell directs that whenever a collection of yellow secretion takes place at the inner canthus, or on the cilia, it should be carefully washed off with tepid water, or milk and water, by means of a piece of soft linen, and directly afterwards some alum lotion (two to four grains of alum to an ounce of water) should be applied freely, in the same way, for about a minute. It is to be used warm, and the upper lid gently raised during its application, so as to cause it to pass to the surface of the cornea. The cilia and canthi are to be smeared, not loaded, with some simple ointment. The strength of the lotion is to be gradually increased, and where the disease proves obstinate, a very weak solution of nitrate of silver (half a grain to an ounce of water) should be occasionally dropped into the eye. These measures are almost invariably successful. In the second stage, we are told that so long as the eyelids are swollen and tense, and present a shining and florid surface, the cornea is generally safe. It can seldom be inspected at this time, on account of the great tumefaction of the lids; but, by the application of a leech to each eyelid, with subsequent fomentation, such a subsidence of inflammation is generally obtained as to reduce the swelling, and permit of the employment of the astringents as directed for the first stage. The leech bites must always be watched, and it will generally be necessary to stop their bleeding, for the infant does not bear the loss of much red blood.

SCROFULOUS, OR STRUMOUS OPHTHALMIA, PHLYCTENULAR OPHTHALMIA.

This is said to be in this country, at least, by far the most common form of ophthalmia, in the proportion almost of nine to one.

Its subjects are principally children, not infants at the breast; but those of all ages, from that of one year to nine or ten. It is sometimes met with in those who are still older, up to the age of puberty, but it is very rare indeed in those who have long passed that epoch. One of its most marked characteristics is the extreme intolerance of light, a peculiarity far less observable in other apparently much severer varieties, except where they occur in subjects of a scrofulous constitution. So constant and striking a symptom is this of the disease, that one author, Mr. Tyrrell, thinks that some cases of it would be more appropriately termed scrofulous morbid sensibility of the retina, than placed among the diseases of the conjunctiva. Dr. Mackenzie, however, and others, consider it as an eruptive affection of this membrane. All are agreed that it is often associated with eruptions on the skin, as porrigo, impetigo, and lepra, and that it is symptomatic of a strumous diathesis, and frequently accompanied by other signs of that condition.

"At the commencement of the disease," says Dr. Mackenzie, "the redness of the conjunctiva is very slight. It often exists only on the inside of the lids. Sometimes a few scattered vessels are seen coursing through the conjunctiva to the cornea; in other cases no enlarged vessels are perceived; so that the incipient stage is distinguished more by intolerance of light than by any direct signs of inflammation. As the disease advances the redness increases, and the sclerotica also appears somewhat inflamed. One of the most remarkable symptoms is the existence of one or more phlyctenulæ, or small pimples, on the cornea. In many instances, a single minute elevated point, of an opaque white colour, near the centre of the cornea, is all that is to be seen of this kind; in others, numerous phlyctenulæ are present, some on the cornea, and others on its edge, which is a very common situation for them. They vary in size, being commonly smaller on the cornea. The phlyctenulæ may disappear, leaving at first a white speck, called albugo, which is generally at last absorbed. Sometimes red vessels run to an albugo and form a vascular speck, which is a very tedious and troublesome symptom. Quite as often the phlyctenulæ burst and form ulcers, at times deep and funnel-shaped, and occasionally penetrating to the anterior chamber of the eye. Through the little fistulous opening thus formed, a small portion of the iris often protrudes, and looks not unlike the head of a fly. Adhesion takes place between this bit of iris and the ulcer; the latter contracts, and forms a white indelible cicatrix, called a leucoma. Where there has been an extensive protrusion of the iris, a partial staphyloma is sometimes produced."

The intolerance of light is evinced in the whole conduct of the child, who lies on his face in bed, or presses his arm over his eyes, and is prevented by a spasmodic closure of the eyelids, if he attempt to look up in the light of day. This symptom is always most severe in the morning, sometimes remitting in the evening, so as to allow the opening of the eyes for some hours. There is at the same time epiphora, and often violent fits of sneezing. A gush of tears occurs whenever the eye is opened, either voluntarily, or by force, which causes chafing and excoriation, or even swelling, and a pustular eruption on the cheek. A degree of itchiness attends the disease, so that the patient rubs the eyelids very much. There is seldom much pain, except that this not uncommonly occurs at night. The disease is commonly attended by inflammation of the follicles of the lids, or, as it is called, ophthalmia tarsi. Interrupted nutrition of the eye is by no means an uncommon sequela of its long continuance, so that the ball remains dwarfish or atrophic. It appears also sometimes to be followed by amaurosis.

Cold, the exanthemata, and other sources of local irritation, are the causes wont to produce this disease in those who are predisposed to it by a scrofulous habit of body. The sufferers from it are feeble and out of health; and are apt to be hot and restless in the early part of the night, and to perspire profusely towards the morning. A great degree of fretfulness is produced by it and prolongs its continuance.

Treatment. — We have here to take into account both the constitutional condition, and the local disease. And it seems that measures directed to the correction of the former are of primary importance, having a greater influence upon the affection of the eye, than such as are calculated to act immediately upon that organ.

If the skin, the alimentary canal, or the liver, are deranged in their functions, our first object must be to restore them to a healthy tone. The general plan of treatment is well described by Dr. Mackenzie, from whom we have borrowed our description. "As soon as the stomach," writes this author, "has been cleared by an emetic, and the bowels put to rights by repeated doses of calomel, with rhubarb, or some other such purgative, the use of the sulphate of quinine may be begun, unless the pulse is very quick, and the skin hot, when small doses of tartar emetic will be preferable, or when an impetiginous eruption is observed on the surface of the body, in which case a course of purgatives ought to be adopted. The dose of quinine employed is generally a grain thrice a day; in very young children, half a grain; and in adolescents or adults, two grains. It may be given rubbed up with sugar; but appears to act best when dissolved in the elixir of vitriol, to which a sufficient quantity of syrup and water should be added."

This remedy is said in most instances to have acted like a charm, abating commonly in a few days the excessive intolerance of light and profuse epiphora, promoting the absorption of phlyctenulæ, and hastening cicatrisation of ulcers of the cornea. In one case where lymph was effused in the anterior chamber of the eye, two grains of calomel, with one-third of a grain of opium, were given every night in addition to the quina.

In this case too, as may be necessary in others, leeches were applied to the lids. General bloodletting is never required. The solution of the nitrate of silver, of the strength of four grains to the ounce, is employed in this affection by Dr. Mackenzie, though he admits that it is liable to leave a permanent stain when long continued. Perhaps the solution of alum might be substituted for, or used interchangeably with it. Mr. Tyrrell recommends only warm fomentations, and disapproves of astringents. Counter-irritation, by blisters behind the ear, are often useful; and their repeated application is preferable to keeping them open, or causing a continued drain by setons. There is some risk, however, in employing blisters in young children, or such as are very feeble, since they have been known to produce mortification, and consequently death.

During the continuance of an attack of active inflammation, abstinence from animal food, and from all kinds of heating liquors, must be enforced; but when the acute symptoms have subsided, the patient is to be put upon a rather generous diet. The employment of tonics, both medicinal and dietetical, must be continued long after the disappearance of the disease, in order to obviate the tendency to a relapse, or reproduction of it from slight causes. Change of air is to be classed among these means.

Mr. Tyrrell mentions that he has known, in several instances, this form of ophthalmia, after having continued for a long while, to disappear on the establishment of menstruation in young women. Hence it will be an object in such cases to direct our attention to promoting the proper performance of this function.

Another variety of scrofulous ophthalmia is described, in which, instead of phlyctenulæ, pretty large pustules are observed filled with yellow matter, by the bursting of which, broad elevated ulcers are formed, generally at the distance of a line or two from the edge of the cornea. Here there is less intolerance of light than in the complaint just described, and never any spasm of the lids. It is apt to be combined with the catarrhal form, and is much milder and more tractable than the phlyctenular.

Here the secretions are to be set to rights by calomel purgatives, and the constitution strengthened by scruple doses of sesquioxide of iron, or some other mild chalybeate, while the same local treatment is to be pursued as in the last disease.

Other forms of ophthalmia are mentioned by authors, but our description has comprehended the most severe and important. For that simple variety, attended principally by watering of the eyes, and some degree of weakness of sight or intolerance of light, whether caused by cold or other irritants, often occurring in elderly or other persons in feeble health, it will be enough to prescribe some mild eye-water, made with sulphate of zinc, alum, or nitrate of silver, and containing from half a grain to two grains to the ounce; while at the same time attention must be paid to improve deranged functions, and to strengthen the system by such means as have been already indicated.

The ophthalmia tarsi, or chronic inflammation of the follicles in the edges of the lids, manifested by some swelling, and redness, and agglutination at night, may be relieved by smearing the edges every night and morning by a weak ointment, containing half a drachm of the ointment of nitrate of mercury, with seven and a half of fresh lard; which may be gradually increased in strength, or exchanged for some other. We have known the unguentum plumbi compositum, diluted with two or one part of lard, to be of service.

In most cases of ophthalmia it is advantageous to protect the eye from light, heat, and dust, by means of a shade, or the use of plane, neutral-tint spectacles. If any other covering be used, care should be taken that it does not occasion too much heat. In scrofulous ophthalmia the patient's room should be kept darkened.

OTITIS, OR INFLAMMATION OF THE EAR.

Inflammations of the ear are for the most part unaccompanied by pyrexia, although the sufferings of the patient are sometimes very great; but in some instances they are attended with fever, assume a formidable appearance, coma, delirium, and convulsions supervene, and even a fatal termination has been the consequence.

Otitis is produced by the same causes with other inflammations, but by none more readily than a partial exposure to cold.

While it is merely a local affection, local remedies alone are necessary, if we except cathartics, for the purpose of dislodging the contents of the primæ viæ. Local bloodletting, the application of a blister behind the ear, and of warmth, are the means chiefly to be relied on.

If the pain does not abate, but, on the contrary, should continue to increase, we may expect a suppuration to ensue. This we may then encourage by the application of emollient poultices and warm vapour; and when the abscess bursts, or is opened, we may syringe the ear from time to time with some mucilaginous and gently astringent decoction.

When otitis is accompanied with universal pain diffused over the head, fever, delirium, or coma, the most powerful general means are to be combined with the local ones, as recommended in phrenitis.

Suppuration is generally the consequence of these violent forms of the disease, and then the structure of the whole internal ear is often destroyed, the bones being discharged through the meatus auditorius with much purulent and fetid matter. In such cases, the sense of hearing in the ear affected is wholly lost, of course.

Fistulous ulcers of the internal ear are now and then the consequence of suppuration, and prove very troublesome.

In cases of a purulent discharge from the ear, accompanied by deafness, very great benefit has been derived by injecting the ear with pyrolignous acid, properly diluted with water, say two drachms of the former to six ounces of the latter.* Previous to a use of the injection, the parts should be first washed out with tepid water, and then the fluid be injected, so as to be directly applied to the abraded or ulcerated surface. During the use of the injection, the bowels must be kept open. The usual effects produced by the injection are, first, a sense of giddiness, succeeded in a few minutes by an agreeable warmth, sensation of lightness in the head, and then a restoration of hearing.

Ear-ache sometimes continues many days without any apparent inflammation, and is then frequently removed by filling the ear with cotton or wool, wetted with tincture of opium or ether, or even with warm oil, warm water, or glycerine. Sometimes a pain in the ear is the consequence of association with a diseased tooth, in which case the ether should be applied to the cheek over the suspected tooth, or a grain of opium with a little camphor, may be applied to the tooth itself.

CYNANCHE TONSILLARIS, OR QUINSY.

In this complaint the inflammation principally occupies the tonsils; but it often extends through the whole mucous membrane of the fauces, and interferes with the speech, respiration, and deglutition of the patient. It sometimes extends to the Eustachian tube, and produces more or less deafness.

It is readily to be distinguished from cynanche maligna by the strength of the pulse, the greater difficulty of deglutition, and the absence of ulcers in the throat.

The causes which usually give rise to it are exposure to cold, either from sudden vicissitudes of weather, from being placed in a partial current of air, wearing damp linen, sitting in a wet room, or getting wet in the feet, or coming out of a heated and crowded room suddenly into the open and cool air; all of which may give a sudden check to perspiration. It is chiefly confined to cold climates, occurring usually in the spring and winter; whereas the cynanche maligna chiefly attacks those of a weak irritable habit, and is most prevalent in warm climates. The former differs from the latter likewise in not being contagious. In many people there seems to be a particular liability to this disease, since by every considerable application of cold it is readily induced in them.

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* See Illustrations of Acoustic Surgery, by T. Buchanan, Surgeon to the Hull Dispensary for Diseases of the Eye and Ear.

An inflammatory sore throat discovers itself by a difficulty of swallowing and breathing, accompanied by a redness and tumour in one or both tonsils, foulness of the tongue, lancinating pains in the parts affected, hoarseness of the voice, a frequent but difficult excretion of mucus, and some pyrexia. As the disease advances, the difficulty of swallowing and breathing becomes greater, the speech is indistinct, the food and drink on attempting to swallow are returned through the nose, the tongue swells and is encrusted with fur, and the pulse is frequent, beating from 100 to 140 in a minute. In a few cases, small white sloughy spots are to be observed on the tonsils, and in very violent ones there is complete deafness. When the symptoms of cynanche are considerable, the whole face partakes of it, the eyes are inflamed, and the cheeks florid and swelled; respiration is performed with difficulty, and the patient is obliged to be supported in nearly an erect posture to prevent suffocation. Even delirium and coma sometimes supervene. If the inflammation proceeds to such a height as to put a total stop to respiration, the face will become livid, the pulse will sink, and the patient quickly be destroyed.

The chief danger in this species of quinsy arises from the inflammation occupying both tonsils, and proceeding to such a degree as to prevent sufficient nourishment for the support of nature being taken, or wholly to stop respiration; but either of these events is very rare indeed; the usual termination is either in resolution or suppuration. When proper steps are adopted early, the inflammation will in general readily go off by the former. Cynanche tonsillaris rarely terminates either in gangrene or scirrhus; but not unfrequently a permanent enlargement of the tonsils remains, particularly in persons of a scrofulous diathesis.

Slight pyrexia, free respiration, deglutition not much impeded, and universal but gentle diaphoresis are to be regarded as symptoms which denote a termination of the disease in resolution.

When suppuration is likely to ensue, the parts affected become more pale and less painful, a sense of pulsation is felt in them, and there are slight rigors. The suppuration sometimes takes place at the lower part of the tonsils, and then the matter is discharged into the œsophagus, and passes into the stomach; and bursting is only known to have happened by the immediate relief which the patient experiences. In other cases it is brought up, and discharged by the mouth, often mixed with blood, of a nauseating taste, and fetid smell. The relief experienced by the discharge is often very remarkable from its suddenness; for the person who a few minutes before was not able to swallow any thing, and who breathed with great difficulty, now feels perfect ease, and is able to eat and drink heartily. Sometimes, however, the disease does not terminate by a proper suppuration, but in several small abscesses, which produce trifling superficial ulcers, being of a white or grey colour, similar to aphthæ; whereas those in cynanche maligna are of a dark brown or black colour.

Where cynanche tonsillaris has proved fatal by suffocation, little more than a highly inflamed state of the parts affected, with some morbid phenomena in the head, have been observed on dissection.

In a great number of cases of cynanche tonsillaris, a palliative and expectant, rather than active or heroic treatment is found to be most suitable. Few or none of those who have undergone repeated attacks will be found advocates for, or tolerant of, the latter. Gargling perseveringly with warm water, or milk and water, and the inhalation of steam, exert a very soothing influence on the parts affected; and sometimes these means, with rest, low diet, and a brisk cooling purgative of senna and salts, are all the discipline required. An emetic, consisting of twenty grains of ipecacuanha, and one of tartar emetic, taken at the very outset, will often, we are told, cut short the disease. But catharsis is of admitted efficacy, and seems to us a less severe ordeal to go through. Guaiacum, which has been recommended by Mr. Bell, of Barrhead, in doses of half a drachm, suspended in water by means of mucilage, as a specific in this disease, to be taken every six hours, must in such quantities have a powerful purgative action. Where the swelling within the throat, the pain, and difficulty of swallowing have been considerable, we have not hesitated to apply six or eight leeches to the throat behind the angle of the jaw, and we have found the consequent relief considerable, even when the disease has been of two or three days' duration, and though suppuration has not been prevented. We have never had recourse to general bloodletting from the jugular or from any other vein, and believe that the occasions for its judicious performance are very rare indeed. Scarification of the tonsils may, in extreme emergencies, be employed with very beneficial effects; but requires great caution on the part of the operator, since it has several times been followed by alarming, and even fatal hæmorrhage. Very often, in addition to the soothing means already indicated, from half a drachm to a drachm of Epsom salts, with fifteen or twenty minims of antimonial wine, given in camphor mixture thrice a day, will suffice to keep down the pyrexia, and abate the local symptoms in the early stage; and shortly we shall benefit our patient, by giving the same salt in the compound infusion of roses, with a little additional acid, or a few drops of acetum scillæ. As the swelling of the throat abates, a grain or two of sulphate of quinine may be advantageously added to either of the latter draughts, the salts being at the same time diminished or omitted, in order to prevent too free an action of the bowels.

In this complaint it is found of service to wash the mouth and fauces frequently with some mild astringent gargle* somewhat acidulated, and likewise to scrape and cleanse the tongue from the fur which is apt to collect on it.

Gargling is the best mode of washing the internal fauces; but its motion is sometimes so painful or irksome as to prevent the patient from having recourse to it. In such cases, the medicine may be thrown into the fauces by means of a syringe. Or, instead of this, he may be desired to suck honey alone, or honey of borax, either of which has some soothing virtue if employed while there is a fair chance of its being resorted to. Or a lotion of nitrate of silver, with ten grains to the ounce, may be brushed over the affected parts.

Frequently inhaling the vapour arising from warm water mixed with a little vinegar, throughout the course of the day, will greatly assist the effects of gargles; and where Mudge's inhaler cannot be procured for the purpose, we must be content to substitute a basin with an inverted funnel over it.

Where the symptoms run high, the patient ought to be confined to bed. Probably a pediluvium in the evening might have a good effect.

If our endeavours to subdue the inflammation have proved fruitless, and it seems likely to terminate in a suppuration, we ought then to hasten it by the frequent application of warm fomentations and emollient poultices to the throat; and by directing the patient to receive the vapour arising from warm milk and water into the fauces several times a day, in the manner before recommended.

Warm gargles composed of a decoction of figs and barley-water may also be employed, and the best way of using them will be to permit as large a quantity as can conveniently be retained to lie on the part till it cools to the temperature of the mouth. When

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* ℞ Confect. Ros. Gallic. ℥j. Aq. Bullient. Oss. Acid. Sulphuric. Dilut. f. ʒj. M. Ft. gargarisma.	* Take Confection of the Red Rose, one ounce. Boiling Water, half a pint. Diluted Sulphuric Acid, one drachm. Mix them for a gargle.
Vel, ℞ Decoct. Hordei, f. ℥vj. Mel. Rosæ, f. ℥j. Acid. Sulphuric. Dilut. ♏xxx. M.	*Or,* Take Barley Water, six ounces. Honey of Roses, one ounce. Diluted Sulphuric Acid, forty-five drops. Mix them.
Vel, ℞ Aluminis, ʒj. Decoct. Hordei, Oss. Mellis Rosæ, f. ℥j. M.	*Or,* Take Alum, one drachm. Decoction of Barley, half a pint. Honey of Roses, one ounce. Mix them.

the matter is formed, if the tumour does not break readily, it may be punctured with a lancet.

During this stage of the disease, the passages to the stomach and lungs are sometimes so closed by the size and pressure of the tumour, as to endanger the life of the patient, either by suffocation or the want of nourishment. In the first case, recourse should be had in proper time to the operation of bronchotomy, in order to keep up respiration; and in the last, the strength must be supported by nutritive and mucilaginous clysters, consisting of animal broths, thick gruel, arrow-root, barley-water, or a solution of starch, which should be thrown up the intestines in a small quantity each time, as they will thereby be absorbed the more readily, and will not be so apt to pass off again without affording any benefit.

Before we resort, however, to bronchotomy, it may be worth while to endeavour to break the tumour, either by exciting vomiting by an emetic, or by making the patient receive through an inhaler the streams arising from warm water, to which a sufficient quantity of ether has been added. The stimulus will prove so great as to succeed in many cases, particularly where the suppuration is nearly completed.

In cynanche tonsillaris an antiphlogistic regimen is necessary, and should be more or less strictly enjoined, according to the degree of general excitement. Even where this is not very considerable, all fermented liquors must be avoided; and the diet should be light and diluent, consisting of mild vegetable matters, such as roasted apples, boiled turnips, and subacid fruits.

But neither antiphlogistic treatment nor abstemious diet should be enforced too long. The disease consists no doubt in a local inflammation, but its constitutional effects are depressing beyond what its extent and severity might lead us to expect. Hence it becomes necessary, at an early period, to give support in the form of beef-tea, and soft nutritious substances, and to resort to tonics too. If there be any one stupid idea which has obtained general prevalence, more pernicious than another, it is the idea, not openly expressed, but continually implied, that local inflammation is but as it were a manifestation or consequence of general plethora, or over action, and as such, to be combated by abstinence and depletion. But observation gives the lie to this theoretical preconception, and shows that it is not either full habit, or strong cardiac action, or rich blood, which is the source or support of such local inflammation; but that the reverse of all this is true, that the local inflammation is the worst where the system is most feeble and most impoverished. Hence the necessity, in many local inflammations, and generally in this, of subduing the local action by local means, and fortifying or not depressing the constitution generally.

The tonsils sometimes become affected with permanent swelling and induration, in consequence of an attack of cynanche, giving a good deal of uneasiness to the patient. In some cases the complaint will yield to astringents; but when it does not, and impedes his respiration or deglutition, so as to cause deterioration of the health, as little good can be obtained from medicine, it will be advisable to remove a portion of the gland with a scalpel, after it has been secured and drawn forwards by means of forceps furnished with hooks.

CYNANCHE PAROTIDÆA, OR THE MUMPS.

THIS disease chiefly affects children, but occasionally it attacks adults: it is often epidemic, and manifestly contagious.

It is distinguished by an external movable swelling, that arises most commonly on both sides of the neck, but in some instances it is confined to one. These tumours occupy the maxillary and parotid glands; are large, hard, and somewhat painful; and sometimes they attain to such a considerable size, as greatly to impede the powers of respiration and deglutition, giving rise thereby to pyrexia. The swelling usually continues to increase till the fourth day; but from that period it declines, and in a few days more goes off entirely, and then the febrile disposition likewise ceases. As the swelling of the fauces subsides, it not unfrequently happens that, by metastasis, inflammation affects the testicles in the male sex, or the breasts in the female; but this generally goes away in a few days. Sometimes the tumour in the fauces suddenly disappears without the supervention of the last-mentioned symptom, or this is quickly repressed; in which case there may be a translation to the brain, and symptoms of genuine phrenitis may come on. In a few instances, where the swelling has been very great, suppuration has taken place in the cellular membrane, and occasioned deformity; or by bursting inwardly, and discharging its contents into the larynx, has suffocated the patient.

There is, however, seldom much danger from this disease, except when symptoms of congestion in the brain or its membranes arise.

The mumps do not often require the assistance of medicine; and all that is in general requisite is, to keep the head and face warm, to avoid taking cold, to apply soothing fomentations, and to open the bowels by the mildest cooling laxatives. But should the tumour in the neck suddenly disappear, and the febrile symptoms increase, so as to induce an apprehension that the brain will be affected, it will be advisable to promote and reproduce the swelling by warm fomentations and stimulating liniments*; and to obviate the fatal consequences that might ensue from its suddenly receding, by means of venesection, nauseating doses of antimonial medicines*, cathartics, and blisters, according to the violence of the disease.

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* ℞ Liniment. Ammoniæ Fort. f. ℥j.

Vel,

℞ Spirit. Camphoræ, f. ℥j.
Liquor Ammoniæ Subcarbonat. f. ʒij.
Tinct. Cantharidis, f. ʒss. M.

Ft. linimentum,

* Take Strong Liniment of Ammonia, one ounce.

Or,

Take Camphorated Spirit, one ounce.
Solution of Subcarbonate of Ammonia, two drachms.
Tincture of Cantharides, half a drachm.
Mix them for a liniment.

When the testicles become affected and are swelled, every endeavour should be exerted to prevent suppuration from ensuing, and we are, therefore, to have recourse to bleeding, both general and topical, cathartics, cooling and discutient applications, and a suspensory bag. Much the same means are to be adopted when, on a retrocession of the tumour in the neck, the female breast becomes indurated and swelled.

CYNANCHE MALIGNA, OR PUTRID SORE THROAT.

Dr. Tweedie expresses a generally received opinion, when he says, "indeed we are inclined from our own experience to affirm that the scarlatina simplex, scarlatina anginosa, and the scarlatina or angina maligna, and the sore throat without efflorescence on the skin, are merely varieties of one and the same disease." Hence, it is manifestly unnecessary to give a separate account of the malady designated as cynanche maligna, or putrid sore throat, for which we must refer the reader to that part of a former article which treats of the scarlatina maligna.

CYNANCHE TRACHEALIS, OR CROUP.

The croup is an inflammatory affection of the mucous membrane of the trachea and larynx, of such a kind as to stimulate the vessels to throw out coagulable lymph, instead of inducing only an increased and altered secretion, according to the customary action of those membranes. In many instances the inflammation extends even to the bronchial ramifications and substance of the lungs, producing an exudation that appears partly in a membranous coating, and partly in a fluid resembling pus.

Difficult breathing, hissing inspiration, hoarse voice, and ringing or brazen cough, form the combination of symptoms which, according to Cullen, when accompanied by great pyrexia, certainly indicate that the larynx and upper part of the trachea are affected with inflammation, threatening death by suffocation, and often going on to a fatal termination within three or four days. But while true croup, characterised by its plastic membrane, has been distinguished as cynanche trachealis, in order to mark the chief seat of the inflammation, and is a disease of infancy and early childhood, the cynanche laryngea belongs to adult age, is scarcely ever accompanied by any membranous formation (except when it occurs as a secondary disease), and is fatal mainly in consequence of œdema of the submucous membrane of the epiglottis and larynx obstructing the narrow passage for the admission of air. Nevertheless, according to Dr. Alison, these distinctions are not so uniformly observed as to enable us to form separate species of the disease as occurring in children and in adults. We believe that the secretion of a false membrane is not a universal occurrence in the former, even when presenting all the symptoms of croup; and we have learned no means by which its extent can be ascertained during life, or even its existence, independently of its expulsion either by vomiting or coughing. Dr. Watson, in describing this membrane, says that usually it commences just below the larynx, where it is thin and soft; about the middle of the windpipe it is more dense and firm; lower down in the trachea and in the bronchi it is generally looser again, pulpy and broken. On the other hand, there are a few cases in which this membrane is not formed at all.*

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* ℞ Potassæ Nitrat. ʒj.
Antim. Tartarizat. gr. j. M.
Et in chartulas vj. divid. quarum unam dosem sumat 4tis horis.

Vel,

℞ Haust. Salin. f. ℥jss.
Vini Antimon. Tart. ♏xv—xx.
Syrup. Cort. Aurant. ʒj.
Ft. haustus, 3tiâ quâque horâ capiendus.

* Take Nitrate of Potass, one drachm.
Tartarized Antimony, one grain.
Mix them together, and divide them into six papers, of which one dose is to be taken every four hours.

Or,

Take Saline Draught, one ounce and a half.
Wine of Tart. Antimony, from fifteen to twenty minims.
Syrup of Orange-peel, one drachm.
Make them into a draught, which is to be taken every three hours.

Although croup is on all hands allowed to depend on acute inflammation, it seems nevertheless generally admitted that spasm produces no insignificant portion of its phenomena and peril. Thus Dr. Stokes holds the opinion that the cause of obstruction is more spasm than the effusion of lymph.† Dr. Alison says that the sudden exacerbations and remissions of dyspnœa in this disease depend in part on spasm occasionally supervening on inflammation‡; while Dr. Hasse states that, according to the best authorities, death is for the most part rather due to this inflammatory spasm, than to mechanical hindrances.§ Dr. West, too, says of croup, that, though an inflammatory disease, it is not without a very manifest spasmodic element in many cases; so as to form a sort of transition between inflammatory and spasmodic diseases of the respiratory organs.‖

Some physicians have judged it proper to divide croup into two species, viz. idiopathic, where the disease is primarily and exclusively seated in the trachea, bronchia, and lungs; and symptomatic, where it appears as the consequence of some previous disorder, such as the measles or scarlatina; for it has at times been found as the attendant of these complaints.¶

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* Lectures, i. 836.

† Diseases of the Chest, 215.

‡ Outlines of Pathology and Practice, 258.

§ Anatomical Description, 278.

‖ Lecture xix.

¶ See Medical History and Reflections by Dr. Ferriar, iii. 205. — Dr. Cheyne's work, 37. 39.

There is occasionally observed in sensitive young women a hard barking cough, unaccompanied by expectoration, which approaches somewhat in character to the cough of croup. It does not, however, bear a complete resemblance, since it wants the peculiar ringing sound. The age of the patient, the absence of difficulty of breathing and of pyrexia, often also the duration of the case before we are consulted, will serve to distinguish this hysteric affection from croup.

The disease most likely to be confounded with true croup, and which we believe has sometimes been mistaken for it, is the laryngismus stridulus, the crowing inspiration of infants, or spasmodic croup; but in this latter there is no cough at all, or at all events no croupy cough, while there are often present contractions of the thumbs or toes, or other indications of spinal irritation. In this disease, besides, there are complete intermissions between the paroxysms of dyspnœa, wherein the patient is quite well; and throughout the wheezing is confined to the larynx, without any evidence of disease of the lung itself, which is seldom absent in croup.

The inflammation in croup appears to be of a very peculiar nature. The opinion now universally entertained is, that the new membrane is a modification of coagulable lymph incapable of becoming organised.

Children are, almost exclusively, the subjects of this disease. Dr. Craigie has shown, by a reference to numbers, that it is by far most frequent between the first and the seventh year; less common between the seventh and fourteenth, and very rare indeed between the fourteenth and twenty-first. Male infants, and such as are robust, are more prone to it than females, and those that are less strong. It is said seldom to occur till after weaning, but to be more common in those that are weaned early.

The croup does not appear to be contagious, but it sometimes prevails epidemically. It seems, however, peculiar to some families; and a child having been once attacked, is very liable to its returns, at uncertain periods, from any slight exposure to cold; but then these later attacks are usually less severe.

The application of cold seems to be the general cause which produces this disorder, and, therefore, it occurs more frequently in the winter and spring, when the weather is stormy and blowing, than in other seasons. It has been observed to be most prevalent near the sea-coast, where the air is loaded with moisture; but it is frequently met with in inland situations, and particularly those which are marshy. It is less known in the temperate than in the northern regions of Europe.

The attack of croup almost always takes place in the evening, and often after catarrhal symptoms have existed for several days. Shortly prior to its supervention, the child may be observed to be excited, in variable spirits, more ready than usual to laugh or to cry, a little flushed, occasionally coughing, the sound of the cough being rough; and this roughness or hoarseness, which does not usually attend the ordinary catarrhal affections of infants, should, according to Dr. Cheyne, from whom we are here borrowing, arouse the apprehensions of the parents and medical attendant. Generally, the child has been for some time in bed and asleep before the disease declares itself; then perhaps, without waking, he gives a very unusual cough, well known to every one who has witnessed an attack of croup; it rings as if he had coughed through a brazen trumpet, and when the patient is roused, the sound of the voice is changed; puling, and as if the throat were swelled, it corresponds with the cough. The cough is succeeded by a sonorous inspiration, not unlike the kink in pertussis; the breathing now becomes audible, and a little slower than common, as if the breath were forced through a narrow tube; and this is more remarkable as the disease advances. The ringing cough followed by crowing inspiration; the breathing as if the air were drawn into the lungs by a piston; the flushed face; the tearful and bloodshot eye; quick, hard, and incompressible pulse; hot, dry skin; thirst, and high-coloured urine, form a combination of symptoms which indicate the complete establishment of the disease.*

Throughout the disease, as a general rule, there is little or no difficulty of swallowing. The cough is generally dry; but if any thing is spit up, it has either a purulent appearance, or seems to consist of films resembling portions of a membrane. Where great nausea and frequent retchings prevail, coagulated matter of the same nature is brought up. With these symptoms there is much thirst, an uneasy sense of heat over the whole body, a continual inclination to change from place to place, great restlessness, and frequency of the pulse. Very often the symptoms suffer considerable and sudden remissions and exacerbations.

In an advanced stage of the disease, respiration becomes more stridulous, and is performed with still greater difficulty, and some degree of spasmodic affection, being repeated at longer periods, and with greater exertions, until at last it ceases entirely.

The croup is to be considered as a very dangerous disease, and sometimes will destroy the child quickly by suffocation, induced either by spasm affecting the glottis, or by a quantity of matter blocking up the bronchia: but when it terminates in health, it is by a resolution of the inflammation, by a cessation of the spasms, by relief to the dyspnœa, and the voice becoming natural, with a copious and free expectoration of the matter exuding from the trachea, or of the membrane formed there. The unfavourable symptoms are, increasing difficulty of breathing, great anxiety, violent fever, frequent fits of coughing, no expectoration, the voice becoming more shrill, and the pulse irregular and intermitting.

The disease has, in a few instances, terminated fatally within twenty-four or thirty hours after its attack; but it more usually happens, that where it proves fatal, it runs on to the fourth or fifth day. Where portions of the membranous film, formed on the surface of the trachea, are thrown up, life is sometimes protracted for a day or two longer than would otherwise have happened. More than one-half of the cases of croup in children terminate fatally. The younger the patient, the greater will be the danger, as infants or young children cannot relieve themselves of the tenacious fluids in the throat by hawking and spitting, as grown-up persons do.

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* Cyclopædia of Practical Medicine, i. 493.

On opening the bodies of children who have died of the croup, it is not unusual to find the lungs in a healthy state; but in some instances they are inflamed on particular points of their surface, and in others, adhesions to the pleura are discovered; occasionally they are found full of dark-coloured blood and serum, and sometimes a quantity of pus is met with. In tracing the bronchia throughout their minute ramifications, they are usually found filled with mucus, but which is of a firmer consistence in the trachea, and, as it were, pasted on the surface of the tube, forming a membranous-like concretion, of variable colour and texture. The upper part of the trachea is the most usual seat of deviation from the natural structure; but this is sometimes observed also in the lungs, and extending to the smallest ramifications of the bronchia. There is little or no recession of the lungs when the thorax is opened, and they have a solid feel from the interstitial effusion, the fulness of the blood-vessels, and the puriform fluid in the bronchial tubes. In the cavity of the thorax, and also in the pericardium, there is frequently serous effusion. The cavities of the heart are in general more filled with blood than usual.

It has been, and I believe still is, in a great measure, the common opinion, that the inflammatory affection in croup is chiefly confined to the trachea and bronchia; but both Dr. Baillie* and Dr. Cheyne† have asserted the contrary, and have given a minute account of several dissections of this disease, wherein the lungs were affected with deep-seated inflammation.

We pass to an account of the treatment which reasoning suggests and experience sanctions in this disease.

Whenever the least change is perceived in the voice of children, although it may be doubtful whether the alteration is or is not the result of a different affection, the most scrupulous attention should be paid to the organs of respiration, that proper means of relief may be adopted without delay. Dr. Cheyne advises that, in what may be considered the premonitory stage of the complaint, when a child becomes hoarse, and begins to cough, he should immediately be confined to a warm room and deprived of all stimulating food, have a tepid bath, and take every hour, or every two hours, a drachm of a mixture consisting of three drachms of ipecacuan wine, five of syrup of tolu, and an ounce of mucilage. He thinks that by these means all danger will probably be averted in cases in which an absence of such precautions might be followed by an attack of bronchitis or of croup.

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* See his Morbid Anatomy, 91.

† See Pathology of the Membrane of the Larynx, by J. Cheyne, M.D.

In the first or incipient stage of croup, our best and most strenuous endeavours should be exerted to lessen the increased action which prevails all over the mucous membrane of the trachea, larynx, and bronchia; and therefore, bleeding, emetics, and purgatives are to be resorted to. The author just referred to further recommends that when the breathing becomes affected, an emetic should be given without delay, and that blood should then be taken from the arm or jugular vein, unless very great relief should follow the operation of the emetic. He points to the success attending this abstraction of blood shortly after the exhibition of an emetic, and before it had taken effect. In the instances referred to, the patients are said to have been of robust constitution, and to have suffered from inflammation of the lungs. The advantage obtained was, that upon vomiting coming on, a state of colliquation occurred, which lasted for a considerable time, a powerful impression being made at a small expense of blood. If the jugular vein cannot be opened, and that in the arm is not to be perceived, we may immerse the child's hand in warm water, and open a vein on the back of it. In this way, we may readily draw off the quantity of blood that may be deemed necessary. Should the symptoms not be mitigated, or should they return after a little time, more blood ought to be drawn from the arm, and afterwards, if necessary, by applying leeches over the top of the breast; but previous general bleeding, either from the jugular vein, arm, or back of the hand, should never be omitted in any case. In those which are urgent, active depletion will be necessary.

But while active depletion is to be practised, we must guard against making it excessive. Dr. Cheyne has stated that, for children under two years of age, it should never exceed five ounces. Dr. Watson considers this a large amount, and we think it would be better to fix a somewhat lower limit. If leeches be substituted in the case of infants at this early age (and often they will be more convenient), the writer last quoted suggests that two leeches should be applied to a child in its first year, and an additional one for each year of age, and probably no better general rule can be laid down. The repetition, either of venesection or leeching, should be resorted to with great caution, and only after emetics, and purgatives, and the warm bath also, have been freely tried. It is only probably at the commencement that bleeding can be useful.

"In every case of croup," says Dr. Craigie, "it is important to administer an emetic at the commencement of the symptoms, with the view both of abating the inflammation and counteracting its effects, and also preventing or arresting the secretion of the plastic fluid."

The most convenient medicine for this purpose is from ten to twenty grains of ipecacuan with half a grain or a grain of tartrate of antimony. Afterwards, and during the whole course of the disease, unless at the periods when cathartic medicine is given, it is proper to exhibit tartar emetic in nauseating doses, both with a view of abating inflammation and facilitating expectoration. From a teaspoonful to half an ounce of a solution containing one grain in each ounce of water should be given every hour.

As vomiting promotes the expulsion of the matters by which the windpipe and lungs are clogged, it will be useful to produce it once or twice in the course of the twenty-four hours, or, in urgent cases, more frequently by an increase of the dose of the solution here spoken of, while at other times the quantity should be such as to keep down the pulse without producing too great and permanent depression.

If there be peril at first from the intensity of the inflammation, there is peril at the last from debility rendering the sufferer inadequate to struggle against the consequences of an almost eradicated inflammation. The cough may become loose, and the secretions fluid and easy to be expelled, if there were but power to make the slight effort for their expulsion. The febrile excitement is gone, but the strength is gone also, and the patient dies. This is a state of things against which the practitioner must watch; his is no easy course in so fearful a disease; but he must not forget that there is a Scylla on the one hand, as well as Charybdis on the other; and he must be prepared to diminish the strength of his nauseating medicines, or the frequency of their administration, or to omit them altogether, or even to reverse his plan of treatment, and have recourse to stimulants, in the almost forlorn hope of resuscitating the flickering spark of life.

On this subject Dr. Cheyne writes that, as there is in inflammations of the mucous membrane of the bowels a point of time when life being rapidly on the ebb, a patient may sometimes be rescued by the substitution of opiates and cordials for the antiphlogistic regimen, so also is there in bronchial inflammation a time when we may with advantage lay aside all lowering remedies, and give burnt brandy and ammonia, to which may be added calomel, with a minute quantity of opium, and the application of spirit fomentations to the surface. Gasping, failure of the pulse, and a clay cold surface, show that our only faint hope is in cordials. This we consider a state of things that may be owing to previous depletion, and though its production may be excusable, or even unavoidable, its probable supervention should be borne in mind from the very beginning. As an emetic the sulphate of zinc, or sulphate of copper, has been employed; the latter we should discard altogether. The former may be used where antimony and ipecacuan seem to produce too great distress, and subsequent depression; where the power of the circulation has been lowered, and our only object is to get rid of the secretions which interfere with respiration. Thus a solution of the sulphate of zinc may be tried in the proportion of a drachm in three ounces of water, and a sixth part be given every ten minutes or so, until vomiting is excited.

In all cases of the croup, the child should be kept nearly upright in bed, to guard it against suffocation.

Throughout the whole course of the disease, an antiphlogistic regimen will be necessary; and the body should be kept open by the frequent administration of some purgative. Brisk purgatives (in which the submuriate of mercury* may be an ingredient) are obviously proper. Their operation may be quickened by occasionally administering clysters. In some cases castor oil will be the best aperient.

To assist the secretion of the skin, which ipecacuan or antimony tend to produce, a warm bath of between 90° and 100° of Fahrenheit may be employed, the patient being kept in it for ten minutes or a quarter of an hour. Blisters are so generally recommended, that we suppose them to deserve a trial; yet we are ourselves of opinion that they are never of much avail in acute inflammations; and that there is always some danger of mortification from their application to the skin of very young children. They should certainly be removed within a few hours; perhaps the best place for their application is between the shoulders. The counter-irritation produced by metal or linen immersed in boiling water, and quickly applied to the skin, is more prompt, but scarcely more trustworthy.

Mr. Mackensie, Professor of Anatomy and Surgery at Glasgow, speaks† very highly of the effects of a solution of the nitrate of silver, (say a scruple of this dissolved in one ounce of distilled water,) when applied by means of a camel's-hair pencil, once or twice a day, according to the severity of the symptoms, to the whole of the membranes lining the fauces, particularly to the tonsils, or wherever the fibrinous crust is in view; and he mentions, moreover, that he does not hesitate, in treating this disease, to push the pencil even to the lower part of the pharynx. The remedy, he alleges, so far from being productive of any irritation beyond the mere mechanical and temporary one attending its employment, uniformly alleviates the symptoms of croup, such as the difficult respiration, barking cough, and the peculiar anxiety of the little patient. He says, it has evidently such an effect upon the diseased

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† See Edinburgh Medical Journal for April, 1825.

* ℞ Hydrargyri Submur. gr. iij.	* Take Submuriate of Mercury, three grains.
Pulv. Jalapæ, gr. jv.—viij. M.	Powdered Jalap, from four to eight grains.
Ft. pulvis catharticus.	Mix these together for a purge.
Vel,	*Or,*
℞ Pulv. Rhei, gr. vj.	Take Powdered Rhubarb, six grains.
Hydrargyri Submur. gr. ij. M.	Submuriate of Mercury, two grains.
Ft. pulvis.	Mix them.

surfaces, both those which it actually touches and those which are contiguous, as to induce them to throw off the false membrane by which they are covered, and that it appears also to prevent the further progress of the exudation.

Dr. Horace Green, of New York, has recently advocated the employment of a solution of double the strength just mentioned, containing two scruples of nitrate of silver in an ounce of water. Further, by employing a stick of whalebone, to the end of which a small piece of sponge is firmly attached, he contrives to apply this wash on the laryngeal fall of the epiglottis, and even to pass it through the rima glottidis to the inner surface of the larynx; and this practice he has found attended with very beneficial results.*

Calomel, in moderate doses, frequently repeated, may be a good remedy in the croup, and, by establishing the mercurial influence, may possibly supplant that of the disease; but using it, to the exclusion, at an early stage of the complaint, of other remedies, such as bleeding, both general and topical, emetics, purgatives, diaphoretics, &c., (with which it is not incompatible), I cannot recommend.

We have tried mercurials in a few cases with very bad success, and are not disposed to repeat the use of them, which is little relied upon by others also, as Dr. Cheyne, Dr. Craigie, and Dr. Stokes. The last of these authors says that, where we have so valuable a remedy as the tartar emetic, it seems scarcely justifiable to tamper with the case by the attempt to produce mercurial action.

Where the child is threatened with suffocation, it will be right to excite sneezing by introducing strong snuff, or the pulvis asari compositus, up the nostrils by means of a quill; as also to excite vomiting by the wine of tartarized antimony, or by sulphate of zinc, if it can swallow.

The operation of tracheotomy has been proposed as a last resource in those cases which threaten suffocation; but from the appearances on dissection, its success must be very doubtful. Some cases have, however, been recorded where the operation has been the means of preserving the lives of children where all other efforts were likely to prove ineffectual; and as experience has shown that the trachea may be opened without danger, and no unpleasant consequences need be apprehended from the operation, it may be resorted to as the last resource in the very advanced stage of the disease.

This operation, if performed at all, should not be delayed too long; the commencement of lividity of the face, or of a tendency to coma, should lead us to resort to it, even when it has not been urgently called for by the sudden supervention of impending suffocation. In our view the small chance of eventual benefit is more than worth the degree of suffering that it involves; yet a fair statement of probabilities will often not surmount the objections of friends to anything of the nature of a surgical operation, and truth must not be sacrificed to zeal.

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* See British and Foreign Medico-Chirurgical Review, July, 1849, p. 170.

So total a silence is observed by the most recent writers on the use of narcotics or antispasmodics in this disease, that we hesitate to recommend them; nevertheless, it seems to us that the spasmodic element, so generally admitted as forming a part of this disease, scarcely engages sufficient attention in practice. We are disposed to think that benefit might arise in some instances from the occasional application to the larynx and throat of some such liniment as that recommended by Dr. Bow, of Alnwick, formed by macerating an ounce of crude opium and half an ounce of soap in eight ounces of compound camphor liniment for some days, and then straining. Such an application, in our view, ought to follow, but not to supersede, the measures of depletion already advocated, and could of course only be made on parts where the skin was unbroken by any recent leech bites, and the cuticle undetached and uninjured by any counter-irritant; but, as we have seen, leeches are better applied elsewhere, and counter-irritants should be used at a distance or not at all.

CYNANCHE LARYNGÆA, OR INFLAMMATION OF THE LARYNX.

Cynanche laryngæa is an acute disease, and of short duration, and affects the mucous membrane of the epiglottis, or rima glottidis, or probably both of these parts, in which there exists a high degree of inflammatory action, occasioning impeded deglutition, with difficult respiration. It is only of late that this fatal variety of sore throat has attracted the notice of practitioners, having commonly been confounded with croup. In many cases there may, indeed, arise some difficulty of forming a just diagnosis; but the following peculiarities will greatly assist us.

In cynanche laryngæa the symptoms are, an uneasy sensation in the larynx, difficult and painful deglutition, more or less swelling of the fauces, great and increasing difficulty of breathing, at times threatening suffocation, the voice being extremely hoarse, or reduced to a scarcely audible whisper, attended by inflammatory fever. In cynanche trachealis there is a difficulty of respiration without any swelling of the fauces, or painful deglutition; the expirations, especially in coughing, are very shrill, but the fever in this is also inflammatory.

The disease here spoken of differs in its nature rather than in its seat from that last described. It is essential to true croup that there should be a pseudo-membranous formation on the surface of some part of the air passages, hence the French designate it as angine couenneuse. That the larynx is implicated as well as the trachea and bronchi in croup is highly probable; this is to be inferred both from the character of the cough, and from that of the respiration. Dr. Hodgkin, in his lectures on the mucous membranes, speaks of croup as a form of laryngitis ; and Dr. Stokes says of laryngitis in the adult, that its principal difference from croup is in the result of the inflammation, which, in place of the formation of lymph, terminates in an œdematous state of the mucous membrane, and its subjacent cellular tissue.

The usual cause of cynanche laryngæa is exposure to cold, which excites a determination to the membrane investing the larynx, giving rise to inflammation therein.

It comes on with chilliness, succeeded by heat and fever, which are soon followed with a hoarseness and indistinctness of voice, laborious respiration and pain, or, as it were, a stricture in the throat threatening suffocation ; the pulse is quick and feeble, the eyes are suffused with blood, and somewhat protruding, the countenance has a livid or swollen appearance, the tongue is furred, the tonsils, uvula, and pharynx are often more or less affected by the inflammation, which generally involves the epiglottis, and causes liquids, on an attempt to swallow them, to be ejected through the nose.

The disease is attended by the perpetual hawking or spitting up of a tough gelatinous mucus. In the course of the complaint, the cellular membrane in the neighbourhood of the larynx has been observed to take on the inflammatory action, giving rise to hardness and fulness of the throat when examined externally. The disease is attended with the utmost danger; and if the symptoms are not subdued by an immediate adoption of proper means, the patient is soon destroyed by suffocation.

The morbid appearances to be observed on dissection of those who die of cynanche laryngæa are as follow : the mucous membrane investing the epiglottis and margin of the glottis is inflamed, serum or pus is effused under it, by which the rima glottidis is narrowed, or actually closed. Sometimes there has been perceived an accumulation of mucus in the cells of the lungs, with a slight effusion of serum into their reticular texture. In some instances the pleura has been found partially adherent, with more fluid in the cavities than is natural.

To control and manage the disease with success, the treatment must be directed to subduing the local inflammation as quickly as possible. In the first stage of the inflammation (or first four-and-twenty or thirty hours of its commencement), when the patient feels uneasiness in the larynx, with difficult and painful deglutition, we should have recourse to copious blood-letting from the arm in a free stream, (to the extent of from sixteen to twenty ounces for an adult,) repeating the operation within a few hours, and nearly to the same amount, should the breathing and deglutition not be very considerably relieved by the first bleeding. After bleeding, some active purgative, such as the submuriate of mercury, joined with jalap, or the compound extract of colocynth, ought promptly to be administered ; and should it not act quickly and satisfactorily, a cathartic clyster may be injected. These last will prove highly necessary, when purgatives by the mouth are inadmissible on account of the difficulty of deglutition. The purgative may be repeated the succeeding day, if necessary, and between the doses we may prescribe small and frequently repeated nauseating doses of some antimonial preparation, such as the pulvis antimonialis, or solution of the antimonium tartarizatum, which may be given in combination with a saline mixture and nitrate of potass. Mercurials, as blue pill or calomel, should be given at the same time in repeated doses, so as to produce salivation, either alone, or in conjunction with Dover's Powder. Or instead of these, when swallowing is difficult, and in addition to them when the symptoms are very urgent, mercurial inunction should be freely resorted to.

Should the inflammatory action in the parts not be subdued by venesection and purging, we may advise cupping on the back of the neck, and a large blister to be put on the chest, immediately under the throat. In addition to these means, the frequent use of an inhaler, filled with warm water and vinegar, may afford some relief, as may also gargling. As an auxiliary, we may likewise recommend the semicupium.

Now and then suppuration takes place, and a copious discharge of matter is thrown up by a violent fit of coughing, produced by an effort at deglutition. Where suppuration exists, it might be advisable to excite vomiting, that the abscess may be ruptured, and the matter discharged by the mouth as expeditiously as possible, and thereby prevent suffocation.

Where the disease resists our best endeavours, laryngotomy affords the only chance of escape from suffocation, by enabling the patient to breathe, till the inflammation, narrowing the aperture of the glottis, may have time to subside; but this operation should not be delayed too long in urgent cases, as, at a late period, it may afford but little or no relief; whereas, when performed in an early stage of the complaint, the benefit to be derived from it will be of high importance.

Mr. Bell has lately endeavoured to simplify and improve the operation of laryngotomy. He recommends the incision to be made with a small scalpel through the membranous space betwixt the thyroid and crycoid cartilages, then to introduce the handle of the knife, and turn it so as to open the slit. This will be sufficient if the occasion be temporary: but if a more permanent gap be required, the four corners left by the incisions may be snipt off.*

Cynanche laryngæa is sometimes met with in practice under a chronic form, denoted by long inspirations occurring in consequence of the constriction of the glottis, the breathing attended with a peculiar noise, not unlike that which characterises croup, a copious but difficult expectoration of ropy mucus, some degree of pain in the chest, the skin hot, the tongue red and dry, the bowels costive, and the pulse very frequent, but more strong or full. As the disease advances, respiration becomes more and more difficult, and is aggravated in paroxysms, during which the face assumes a livid appearance. The duration of the disease is various, extending from three to twelve months. To relieve the patient, recourse must be had to the frequent application of leeches to the throat, succeeded by blisters, a use of expectorant medicines, and occasional laxatives. Alterative courses of calomel, joined with hyoscyamus, or opium, are sometimes recommended, together with the decoctum sarsaparillæ, a milk diet, and change of air.

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* See Surgical Observations, &c. part i. p. 46, by Mr. Charles Bell.

CYNANCHE PHARYNGÆA, OR INFLAMMATION OF THE PHARYNX.

This differs from cynanche tonsillaris only in the seat of the inflammation.

It is of the same nature, is produced by the same causes, and requires a similar medicinal treatment. No surgical assistance can be adopted.

BRONCHITIS.

One continuous membrane, commencing in the nose and mouth, extends over the fauces, and not only passes onwards through the pharynx and œsophagus, to clothe the whole surface of the alimentary canal, but entering by the narrow chink of the glottis invests also the larynx and windpipe, and the long series of ramifying air tubes, till they terminate in the air-cells of the lungs. This membrane is of the mucous kind, a character sufficiently manifest throughout the greater part of its course, but it has been supposed by some gradually to assume more of a serous structure and function as it becomes more attenuated in the extreme subdivisions of the bronchi, and enters the air-cells themselves. Certain peculiar inflammations of this membrane have already been described under the heads of cynanche laryngæa, a rare disease of adult age, and of cynanche trachealis, or croup, a malady confined to children. Pneumonia, on the contrary, may be regarded as involving this membrane where it terminates in the parenchyma of the lungs, at least if we assent to Dr. Stokes's opinion, when he says, "that he who would call pneumonia a bronchitis of the terminal tubes would be hardly guilty of a misnomer." * Dr. Watson, again, asserts that there can be "no question as to the seat of the crepitating rhonchus of pneumonia,

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* Diseases of the Chest, 309.

which proceeds from the very smallest ramifications of the bronchi, and the air-cells themselves." So much of bronchitic inflammation this author considers as forming part of the pneumonia; and he speaks of a more extended bronchitis as its necessary accompaniment, when he says that "pneumonia, without a corresponding extent of bronchitis, is perhaps never seen."* Pneumonia, then, must be classed among the diseases which illustrate, in part at least, the effects of inflammation of a portion of the membrane of which we have been speaking.

The line of demarcation cannot, we conceive, be very precisely drawn between bronchitis and catarrh, seeing that the same parts are engaged in both, and that if the former consist in inflammation of the mucous membrane lining the air-tubes, giving rise, as it constantly does, to an increased and modified secretion, the other is an inflammatory defluxion from the same parts. Catarrh, indeed, is the more ancient term, sanctioned by the immortal Laennec's adoption of it, and if a separate place be now claimed for bronchitis, it is by restricting the meaning in which he used the former word.

Understanding then by catarrh that condition in which ordinary inflammation, generally implicating the mucous membrane of the nose, or eyes, or frontal sinuses and larynx, giving rise to coryza, epiphora, gravedo, or hoarseness or cough, extends only as far as the larger divisions of the bronchi, we shall treat of bronchitis as that in which this affection passes much further onwards, and often into the minuter ramifications of the air-tubes.

Bronchitis is a disease of very frequent occurrence, and may be either acute or chronic; but whereas pure primary acute bronchitis is, in adults at least, a rare affection, an acute attack supervening on the chronic variety, or in organs whose structure and functions have been impaired by previous disease, for the most part of a chronic character, is very common indeed.

But bronchitis, besides occurring as a solitary and independent malady, is wont to coexist with many other disorders, especially with those included among the pyrexiæ. Thus it is present, to some extent, in all cases of pneumonia; it exists in pleuritis; is an element in humoral asthma; rarely absent in the earlier stages of hooping-cough, and a common attendant on consumption. Besides this, it is almost an integral part of measles, and an accidental complication of other exanthemata and febrile diseases.

The commencement of acute bronchitis is marked by pyrexia, by pain and soreness at the upper part of the sternum, by cough, at first dry, but soon accompanied by a thin expectoration, which gives no relief to the uneasiness in the chest and throat itself, succeeded by one of viscid mucus containing air-bubbles, and brought up with difficulty. The breathing is embarrassed, and laborious in very various degrees, according to the part of the mucous surface upon which the chief stress of the disease expends itself, being more difficult where this falls upon the minuter air-tubes; and freer where the larger bronchial branches are principally or exclusively affected: while the severity of the cough, we are disposed to think, is greater in the latter, and somewhat less in the former case. The sudden occlusion, however, of one of the larger branches of the bronchi by a plug formed of its own secretions, and by tumefaction of its lining membrane, has, in a few recorded examples, been followed by intense, and even fatal dyspnœa. Such an accident as this, which we believe to be very rare, must be regarded as forming an exception to the generally symmetrical distribution of bronchial inflammation, wherein it differs from pneumonia and pleuritis, in which both sides of the chest are seldom affected together, and yet more rarely to an equal extent. Hence, neither the movements of respiration, nor the resonance of the chest, present those differences on its opposite sides which are common in those diseases.

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* Lectures, ii. 77. 75.

The constitutional symptoms accompanying acute bronchitis vary greatly according to the age and previous health of those in whom it arises, as well as according to the particular malady with which it is associated. There may be more or less heat of skin and strength of pulse in the bronchitis of the robust, and of children, and in connection with measles or hooping cough; but in general there is somewhat of an adynamic character throughout, a tendency to perspiration being observable, and the pulse combining softness and feebleness with frequency. All this is yet more marked when it occurs in those advanced in years, and when it coexists with influenza there is often an amount of prostration, such as far surpasses that which the extent of the pulmonary affection will enable us to account for. Disturbances of the functions of the digestive organs are more common attendants upon bronchitis, than upon either pleurisy or pneumonia; whence it often arises that an asthmatic element mingles with the disease, and aggravates those attacks of severe dyspnœa which cold or other accidental causes produce in lungs affected by chronic disease. Dr. Hodgkin well remarks that "the general turgescence of the venous system and the lividity accompanying it, are more frequent and remarkable in bronchitis, both acute and chronic, than in almost any other affection, not excepting the blue disease dependent on malformation of the heart."* This distinctive particular has not seemed sufficiently noticed by some other authors whom we have consulted, but to us appears to mark a peculiarity in the kind as well as in the degree of the impediment to respiration.

The physical signs of the first stage of the malady are, as far as percussion is concerned, altogether negative; the chest being everywhere as resonant as in health. This is a generally admitted fact, though the circumstance already adverted to, of the lungs being in all parts similarly affected, destroys that standard of comparison existing in other cases between the sound and diseased portions, and makes the conclusion, perhaps, less absolutely certain. Some, it appears, find it difficult to believe that organs, great part of whose tissue is gorged with blood, and whose air-tubes are lined with a more than natural secretion of mucus, should lose none of their natural resonance; but this may probably be accounted for on the supposition that in a disease tending to the production of emphysema and of dilated bronchi, there is always such a preternatural difficulty of expiration, as causes the air vessels to be distended more or less with air, and the chest itself to be expanded beyond its natural admeasurement. Dr. Stokes manifestly inclines to this view, when he says that "it would be an interesting question, as connected with the absence of dulness in bronchitis, to determine whether, pending the turgescence of the bronchial membrane, some degree of dilatation of the air-cells may not exist, so that the air thus accumulated might compensate for that which has been displaced by the state of the mucous tissue."*

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* Lectures, ii. 68.

Two abnormal sounds of respiration become audible in bronchitis, which have been named sonorous and sibilant rhonchi; the former having a grave tone and being variously modified, so as to remind one of the deepest note of a violoncello, of the snore of a heavy sleeper, or of the more musical cooing of the turtle-dove. These grave sounds are often accompanied by a vibration over the walls of the chest, very perceptible to the touch, and sometimes even to the sight. The sibilant rhonchus or rattle has always a higher note, and is compared to the sound of whistling or hissing. Both rhonchi possess a more smooth and equable character than those termed crepitating or mucous, the former two seeming to arise from an unbroken current of air; the latter from the successive bursting of small air-bubbles. The sonorous rhonchi have their seat in larger air-tubes than the sibilant; the former do not prevent, though they may obscure, the ordinary sound of respiration: the latter interfere with it considerably. These rhonchi, for the most part, coexist, being combined in very various proportions. In the complicated cases which we have witnessed, they have generally accompanied expiration as well as inspiration: the amount of dyspnœa and of danger is in some measure proportioned to their extent and severity, the sibilant being of worse import than the sonorous. In some cases, however, it seems that there may be only slight sibilant rhonchi, not audible except on the patient's making a forced inspiration, yet his case may be one of peril. The signs which mark the stopping of one of the large branches of the bronchi are, continued clearness of sound on percussion, while over a space no rhonchus or murmurs of respiration can be heard. But, even without this very dangerous complication, it is not infrequent to witness sudden paroxysms of intense dyspnœa, coming on for the most part during the night, in which the labour of respiration is extreme, and the loud, sonorous, and sibilant rhonchi, heard both during inspiration and prolonged expiration, threaten suffocation to the sufferer, while the small and feeble and intermitting pulse show how greatly the circulation through the lungs is impeded; as is evinced, also, by the turgid countenance and projecting eye-balls, and at times also by serous effusion within the cavity of the chest. This proneness to sudden aggravation of the difficulty of breathing we have always regarded as characteristic of bronchitis when extending to the smaller air tubes, and as constituting an almost diagnostic mark, if any such were needed, between it and other inflammatory affections of the lungs. For, without denying that exacerbations and remissions of the shortness of breath may occur both in pneumonia and pleuritis, we conceive that they are in those cases neither so sudden in their appearance nor so strongly marked in their degree. Dr. Alison has noticed this liability to exacerbations of the dyspnœa, which he connects with the frequent complication of the disease in those of all ages with spasmodic asthma. Of the coexistence of spasm in these cases we have no doubt; neither have we any of its dependence, in part at least, on causes analogous to those which are operative in nervous asthma, as is rendered probable by the often concurrent disturbance of the digestive functions: we incline, however, to the belief that, in part at least, it is often of an inflammatory nature, and very analogous to that which, in other parts, may coexist with the peculiar inflammation of croup. If the struggle for breath, which arises under these variously combined sources of obstruction, — viz. viscid secretion, tumid mucous membrane, and bronchial spasm, should result in sudden effusion within the cavity of the chest, the dulness on percussion, and absence of respiration in depending parts, will indicate that event, if the imminent peril or impending death of the patient permit of examination.

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* Diseases of the Chest, 68.

The change to the second stage of bronchitis, and the commencement of a better state of things, is ushered in by an alteration in the sputa, which, according to ancient phraseology, are more concocted, or, according to modern views, have lost their pure mucous character, so as to become muco-purulent, or, in rare cases, altogether purulent. The most important circumstance to note is, that they are less viscid and tenacious, are expectorated with less effort, and allow more readily the passage of the air in its entrance to, and exit from, the lungs. At the same time, the constitutional symptoms undergo a change, and the pyrexial state, which, however, from the commencement rarely exists in a very marked degree, is succeeded by one of relaxation of the skin, with more or less perspiration, and a general languor throughout the frame: the pulse is soft, but fuller and less frequent than in the former stage. The breathing, too, is generally much relieved and even where it is least free, it is not so laborious as before. And now, if the secretion be moderate in amount, we may hope, by watchfulness and care, to restore the sufferer to a fortunate termination of his malady, and to the enjoyment of his previous health. But if the secretion be excessive, and occupy the smaller ramifications of the bronchi, so that, though no longer viscid it cannot be abundantly brought up by coughing, we have still a period of great peril to be passed through, while the lungs are gradually freed from the material which already gorges them, and have their secretions reduced to the standard of health. The state of things last described constitutes the suffocative catarrh of Laennec, the spurious peripneumony or peripneumonia of older authors, to be presently noticed more particularly.

With the change in the nature of the expectoration, an alteration also is observed in the sounds furnished by percussion and auscultation. The former in the more favourable cases may, however, still give the natural, or almost the natural, resonance; but where the secretion is excessive, the clearness of sound may be lost in various degrees and extent, especially near the base of the lungs. In general, however, it will be found that, while the sonorous and sibilant rattles have almost or altogether disappeared, a mucous rattle of a different kind is extensively audible. This is an interrupted sound, conveying the idea of small air bubbles bursting in a somewhat dense, but not viscid, fluid; and with the diminution of the secretion, it gradually disappears. It is not unusual for a troublesome cough to remain behind for some time after the dyspnœa; and abnormal signs of respiration have been almost or altogether removed, and convalescence has proceeded up to a certain point. In many cases this persistence of cough will be found connected with some elongation of the uvula, or irritation about the fauces, so that the examination of the throat should, under these cases, never be omitted: indeed, in all bronchial or catarrhal affections, it is well to ascertain how far such a state of things may have aggravated the symptoms. But besides this, there are at times other local uneasinesses, arising probably from some spot of unsubdued inflammation or irritation, which annoy the patient and cause him to cough for their relief. It is not uncommon to have a point near the bifurcation of the trachea indicated as the source of the unpleasant sensation. We think it rare for acute to subside into chronic bronchitis under medical treatment, unless where such subsidence is a mere return, as it often is, to a previously existingc ondition. Dr. Hasse, however, says that, chronic catarrh is always preceded by acute, so that we must suppose a strong tendency to this termination in neglected cases. It is not uncommon for bronchitis, either acute or chronic, to give activity to some existing disposition to tubercular formation or development, so that the commencement of phthisis dates from its occurrence, or seems part of its course.

We do not conceive that any great amount of peril to life exists in acute bronchitis *per se*, and independently of maladies with which it is associated, except in the suffocative form. In hooping cough and measles, the presence of this or other inflammatory affection of the lungs, in winter more especially, augments the danger of the disease, and may demand a modified or more energetic treatment. We doubt whether the affections of the lungs in fever are such as generally to demand or commonly to be benefited by any deviation from the practice indicated by other circumstances, beyond the withdrawal of a few ounces of blood by cupping-glasses or leeches from between the shoulders, or from the neighbourhood of the part most affected. Of very acute bronchitis, not descending to the smaller or capillary air tubes, but presenting at the outset symptoms of a sthenic character,—such as much heat of skin, and difficulty of breathing, with great pain and oppression in the chest, and a more than commonly firm pulse,—we remember to have seen only one case, now many years ago, and of which we regret that we have preserved no notes, in which, in the course of a few days, a very copious expectoration of pure pus was accompanied by immediate relief of these symptoms, and an altered condition, followed, under a moderately supporting regimen, by perfect convalescence after no long time.

Absence of pain on either side, and of any stain of blood in the sputa, sonorous respiration, bronchial râles heard chiefly on expiration, and pretty uniformly on both sides of the chest, while the movement of expansion, and the resonance on percussion continue natural on both. Such, according to Dr. Alison, are the grounds of diagnosis between violent bronchitis and peripneumony, with or without pleurisy. "The diagnosis," he adds, "is remarkably aided likewise by the frequent exacerbations and remissions of the dyspnœa, the former of which, in the cases where there is most of spasm, take place chiefly in the morning after sleep, in those where inflammation predominates chiefly in the evenings, — the remissions being generally marked by free expectoration."

"When neglected in the outset," he goes on to say, "or when occurring in a feeble habit, or complicated with previously existing organic disease, this acute bronchitis is not unfrequently fatal. The fatal event is preceded by increase of the dyspnœa, with failure of the circulation, soft, often irregular, pulse, coldness, lividity, delirium or stupor. And the appearances on dissection are characteristic: the bronchial membrane red and thickened; the bronchiæ, especially the smaller branches, clogged with mucopurulent matter; the substance of the lungs, chiefly the depending portions, gorged with blood, and pouring out much serum when cut and pressed, but no where condensed so as to sink in water; nor mottled by exudation of solid lymph into the air-cells, as in hepatization of the lungs, nor coated on their surface by exudations of lymph." *

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* Outlines of Pathology, 265, 266.

Dr. Hodgkin enters somewhat more in to detail upon the appearances of the mucous membrane itself, when he says, that in those more common forms of inflammation to which the terms bronchitis and catarrh are generally applied we find the membrane extensively reddened, thickened, and softened. The redness is sometimes diffused, but often more intense in spots as well as in streaks, determined by the cartilages of the trachea. If the disease has been of long continuance, the membrane becomes minutely granular. In these cases that lining the subdivisions of the bronchi sometimes resembles deep red velvet.*

If the attack of bronchitis be recent, and have occurred in a plethoric or robust individual, it will be advisable, or even necessary, to commence the treatment by taking blood from a vein, and the more so if the lungs be unimpaired by any previous structural disease. The abstraction of from sixteen to twenty ounces, or sometimes of even less, will probably effect all the good that is to be obtained from this measure. When the amount of the circulation has been so far reduced, local blood-letting by cupping or leeches, will be found more effectual for relieving the dyspnœa, and, if employed in moderation, will reduce the strength less than the repeated use of the lancet. Dr. Addison appears to have been the first who established the superiority of cupping between the shoulders over bloodletting from a vein in relieving the greatly embarrassed capillary circulation in bronchitis. Dr. Hodgkin says that the alleviation obtained by the former measure seems to be more salutary, and also more immediately perceived by the patient himself than when blood is taken from the arm. And although this was to him an unexpected and almost inexplicable result, he declares it to have been established by more than twelve years' experience.† *Ne quid nimis* is the caution that we would add. Neither bleed nor cup without occasion; nor too freely when a demand for those measures exists. The majority of cases of acute bronchitis do well without either of them; and unless we see our patient at the commencement before the sputa have assumed a more or less purulent character, the time for taking blood will have passed away.

In a great number of instances it will be well to commence the treatment with a brisk purgative, — say of calomel and ginger with jalap, or with rhubarb; or of calomel, shortly followed by a draught of senna and salts, while diaphoresis or slight nausea is kept up by means of a saline draught with moderate doses, as twenty or thirty minims of antimonial or of ipecacuan wine. Blisters and mustard poultices are not suited to the first stage of inflammation, or, if applied at all, should be placed at a distance from the part affected. In all cases, probably, a warm foot-bath, made more stimulating by the addition of mustard or of salt, is a preferable resource. The dietary should at first be of the poorest kind, as tea, barley-water, or other vegetable slops, which had better be taken warm. It is of importance, too, that the temperature of the patient's room be so regulated that he may respire air not so cold as to irritate the surface of lungs rendered preternaturally sensitive. The inhalation of steam, too, while the mouth is held over a basin of hot water, has sometimes a soothing effect. He should be so covered with bed clothes as to prevent his being chilled, yet not so as to cause him to be oppressed. His own feelings will generally be a good guide; but if free perspiration should arise, he must not be permitted suddenly to divest himself of covering, and thus to incur a more than ordinary risk of aggravating his malady. All these are small matters in themselves, but not in their consequences, and should not be neglected.

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* Lectures, ii. 67.

† Lectures, ii. 69.

The transition from the difficult expectoration of viscid mucous to the more easy discharge of purulent or muco-purulent sputa marks the proper time for a modification of the treatment; but a sudden change is not desirable. It has long been our custom to be careful in this respect at what may be called the turning point of inflammatory diseases; and in the cases we are considering, this is the more requisite, since slight errors readily reproduce all the previously existing evils. Our rule has been not to change the diet and the medicine simultaneously in the same direction; and it has been our practice to render the former somewhat less depressing before we make any very material alteration in the latter. Thus, beef-tea, or animal broths of greater or less strength, or a little fish, or light pudding, may be allowed to support the strength, while enough of antimony or ipecacuan is retained in our draughts to guard against the return of difficult expectoration. The employment of some bitter vehicle, as infusion of hops, or of calumba, or quassia, we do not regard as interfering with this indication, albeit they are grateful to the stomach, and therefore agreeable to the feelings of the patient. The specific action of mercurials is neither necessary nor advantageous in bronchial affections; and after the first unloading of the bowels, it will often be enough to secure such evacuations as may assist in improving the condition of the tongue, and diminish the tendency to flatulence. In each case the practitioner should watch the effects of his own remedies, and follow the indications which he may gather from them. Our own general impression is that aperients are almost indispensable while the tongue remains foul, while there is a want of appetite, and while the scanty ingesta give rise to abdominal distension and oppression; symptoms which have no very manifest tendency to a spontaneous cure, and the removal of which is followed by a feeling of relief, if not of strength, more than counterbalancing any temporary depression produced. Suitable aperients will be found in some such pills as those of which we give formulæ below*, and we think it advantageous that they should be administered at bed-time, so that their temporary depressing influence may tend to abate any nocturnal exacerbation of fever.

Narcotics should not be exhibited in the early stage of bronchitis, nor in any subsequent one, if the breathing is much impeded by abundant secretion; but where this is not the case, but sleep is prevented by a teasing cough, from eight to ten grains of Dover's powder given at night are often beneficial. Or those who think that the salts of morphia are as sure in their soothing operation, and less prone to derange the stomach, may give from a quarter to a third of a grain of the muriate or acetate made into a pill with a grain of ginger, and two or three grains of blue pill; or the same quantity of either of these salts of morphia may be dissolved in twenty drops of vinegar of squill, and made into a draught with a drachm of syrup of tolu, or of saffron, and cinnamon water or other pleasant vehicle. Or, again, from eight to twelve minims of Battley's liquor opii sedativus may be substituted in the draught for the anodynes just mentioned. Five grains of extract of lettuce, or of hop, will make a good night-pill for such as cannot compose themselves to sleep unless satisfied that means have been adopted to procure that blessing. Sometimes the irritation that produces cough is best allayed in the advanced stage by the application of a blister or mustard poultice to the top of the sternum. Astringent gargles, as one made with a drachm and a half or two drachms of alum, and an ounce of honey in eleven ounces of rose-water, are suitable when there is manifest relaxation of the throat and elongation of the uvula; while sometimes this state of parts will yield better to a wash of nitrate of silver, containing ten grains to the ounce, applied every day or two by means of a camel's hair pencil. And again, in some instances, cough is soothed, and much comfort obtained by some pleasant linctus, of which a teaspoonful may be taken occasionally. We believe that in these cases there is some virtue in acids; since it is, especially in reference to syrups made with them, that the poor are wont to say that they cut the phlegm. A pleasant linctus may be made with half an ounce of lemon juice and the same quantites of decoction of quince seeds and syrup of tolu: or, if we wish to give it anodyne properties, syrup of poppies may be substituted. Squill, in the form of oxymel, or of vinegar, and the compound tincture of camphor, are popular ingredients in cough electuaries. They may be mixed in such proportion with other pleasant and soothing substances, that each of them may form about a sixth of the whole; or that the ordinary dose of the linctus, — viz., a teaspoonful — may contain about ten minims of each. It is desirable that the active components of these syrups, when they contain such, should exist only in such moderate quantities as may exclude the possibility of evil, in the event of their being resorted to with much greater frequency than is designed.

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* ℞ Pil. Rhei Comp. gr. v.
Pil. Hydrarg. gr. iij.
Syrup. Zingib. q. s.
Fiant pil. ij. alt. noct. sumend.

Vel,

℞ Extract. Coloc. Comp. gr. v.
Pil. Hydrarg. gr. iij.
Syrup. Zingib. q. s.
Fiant pil. ij. ut supra dandæ.

Vel,

℞ Extract. Coloc. Comp. gr. v.
Pulv. Scammon. gr. iij.
Mistur. Acac. q. s.
Olei Carui, ♏j.
Fiant pil. ij.

Vel,

℞ Extract. Coloc. Comp. gr. v.
Pulv. Scammon. gr. iij.
Hydrarg. Chlorid. gr. j.—ij.
Mistur. Acac. q. s.
Olei Carui, ♏j.
Fiant pil. ij.

* Take Compound Rhubarb Pill, five grains.
Blue Pill, three grains.
Syrup of Ginger, enough.
Make two pills to be taken on alternate nights.

Or,

Take Cathartic Extract, five grains.
Blue Pill, three grains.
Syrup of Ginger, enough.
Make two pills to be given as above.

Or,

Take Cathartic Extract, five grains.
Powdered Scammony three grains.
Mucilage, enough.
Oil of Caraway, one drop.
Make two pills.

Or,

Take Cathartic Extract, five grains.
Powdered Scammony, three grains.
Calomel, one to two grains.
Mucilage, enough.
Oil of Caraway, one drop.
Make two pills.

In addition to these various placebos suited to the advanced stage of acute bronchitis, the medicines to be employed should consist of stimulating expectorants, as squill or ammonia, given in more or less tonic and astringent infusions.

We are not in the habit of employing ammoniacum, and believe that in mixture it has fallen into disuse. Quinine, after a time, in pill or solution, may be well resorted to for re-establishing the strength, and the mistura ferri composita has expectorant virtues, which make it eligible at a somewhat earlier period. It is impossible to indicate a tenth part of the various combinations of medicines prescribed, perhaps even of those which we ourselves have prescribed for the relief of subacute bronchitis. The proneness to relapse necessitates caution in every onward step that we take; and, in reference to this disease more especially, the precepts "festina lente," and "feel your way," should, we think, be ever present to the mind of the practitioner. It may be true that the patient feels languid and debilitated, and pines for a better diet, and for the invigorating influence of his bitter beer or stout; but if these indulgences light up pyrexia, and there be flushing towards evening, and profuse perspiration in the night, and paroxysms of cough so severe from difficult expectoration, that vomiting takes place, the account taken weekly will show little advance, even while we hear of the daily benefits derived from this strengthening system. As a general rule, we deem it safer to keep the patient on a cooling and diaphoretic treatment a little too long than to subject him to a tonic and stimulating one too soon. The air of the sea side, and other means generally resorted to for confirming convalescence, are available in these cases; and a sea voyage within temperate latitudes is often beneficial.

PERIPNEUMONIA NOTHA, OR SPURIOUS PERIPNEUMONY.

This disease commonly makes its attack on those who are somewhat advanced in life, especially such as are of a phlegmatic habit, or who have had frequent catarrhal affections; and, like the other species of peripneumony, is occasioned by cold, being most prevalent in the autumn and spring, or when there are frequent vicissitudes of the weather from heat to cold.

It comes on usually with alternate chills and heats, flushing in the face, pain and giddiness in the head, a sense of lassitude over the whole body, difficulty of breathing, great oppression at the chest, with obscure pains there, together with a cough, accompanied by some degree of expectoration, and often by a rejection of much viscid mucus.

This disease is the acute suffocative catarrh of Laennec, the asthenic bronchitis of Drs. Badham and Copland. It is accompanied at its outset by the whistling and cooing rattles, the sibilant, or sonorous râles which are heard on applying the ear or stethoscope to the chest. At a later period these are succeeded by the mucous rattle. The resonance, on percussion, is not at all diminished at the commencement; but suffers some decrease subsequently if the secretion be very abundant. It is never, however, dulled to the extent that occurs in pneumonia with solidification of the lung; nor do we meet with the tubular resonance accompanying the voice and respiration in that disease. In the more severe cases the countenance is pallid and anxious. The tongue is often foul, sometimes dry. There is puffiness and lividity of the face, increased as the difficulty of breathing augments, either during the nightly exacerbation, or in the progress of the disease. The patient may be gradually suffocated, drowsiness and stupor marking the oppressed condition of the brain; or effusion into the thoracic cavities may put a more sudden termination to the struggle. Or again, if we succeed in obtaining a free expectoration, and a diminished secretion from the air passages, he may by degrees recover his former health. General anasarca sometimes accompanies this disease, but recedes together with its cause, the impeded circulation in the lungs.

We know of no particular indication by which it can be foreseen at the outset of a case of acute bronchitis, whether the secretion from the mucous membrane will be so excessive as to constitute it a case of suffocative catarrh. General debility in the subject of the disease may more or less predispose to such a result; but this is not invariably the case, since, on the one hand, the aged and infirm may recover without having gone through such a stage of extreme pulmonary infection, and, on the other hand, we have witnessed the most severe case of spurious peripneumony that ever came within our knowledge in the person of a gentleman of strong constitution, and in the prime of life. Here the loading of the lung was such, that for several nights rest could only be obtained when the patient was in an almost upright position in a chair, and the whole of the lower extremities were distended with anasarcous swellings. Expectoration was not difficult; but its amount was insufficient to give more than very gradual relief. In this case moderate support in the form of a mutton chop daily, an occasional mild aperient when the bowels were torpid, and the use of a diet drink pleasantly acidulated with sulphuric acid, and containing a minute proportion of tincture of digitalis, constituted almost the whole treatment of the suffocative stage, and was by degrees eminently successful, the recovery being slow, but uniformly progressive.

In a paroxysm of threatening suffocation coming on in this disorder, relief was obtained by giving the sesquicarbonate of ammonia dissolved in the mixture of assafœtida, and under similar circumstances camphor mixture, with from half a drachm to a drachm of sulphuric ether would be an appropriate remedy. We have never witnessed the effect of an emetic of ipecacuan and tartar emetic in unloading the gorged lungs under these circumstances: theoretically it might be expected to do good; and the only objections to its use seems to be the gorged state of the cerebral circulation, and the increased distress which it might cause in a condition of great prostration, if it failed of speedily producing the desired good. Some authors have lauded the effects of a small enema of starch,—say of one or two ounces, in which ten or twelve grains of disulphate of quinine are diffused,—for supporting the patient's strength, and enabling him to struggle on, when his unassisted power seems inadequate to the task.

In the main this particular form of bronchitis demands no other principles of treatment than such as have been explained under the former head. The expectation of a suffocative stage to be passed through will demand extreme caution and moderation in the use of active depletion; while that stage itself often requires the use of stimulant medicines with a freedom not necessary under other circumstances.

PNEUMONIA, OR PERIPNEUMONY.

A PERIPNEUMONY, or inflammation of the lungs, is denoted by difficulty of breathing, obtuse pain in some part of the chest, a moist cough, frequent pulse, white tongue, high-coloured urine, and other pyrexial symptoms. Pneumonia is sometimes met with combined with typhus gravior (viz. pneumonia typhodes), and then appears under a different character from its usual one.

The true peripneumony comes on with an obtuse pain in the chest or side, great difficulty of breathing, together with a cough, dryness of the skin, heat, anxiety, flushing of the face, and thirst. The pain is increased on coughing or making a full inspiration. At the commencement of the disease, the pulse is usually full, and frequent; but in an advanced stage it is commonly weak, soft, and often irregular. In the beginning the cough is frequently dry, and without expectoration: but in some cases it is moist even from the first; and the matter spit up is various both in colour and consistence, being often stained with blood, which need not, however, cause alarm.

The pain in pneumonia is less in degree and less sharp in character than that of primary pleurisy: it is, at times, inconsiderable or altogether wanting; and we believe that when most severe it is due rather to the implication of the pleura in the disease than to pure pneumonia alone. The amount of shortness of breathing is proportioned not only to the extent of lung affected, but also to the rapidity with which the disease has made its inroads. This symptom is seldom so urgent in pneumonia as it is in severe bronchitis, or in water on the chest: we have never seen patients labouring under pneumonia exhibit the distress which is not uncommon in those suffering from the affections just named; and they do not require the same elevation of the shoulders in bed. The pulse is almost invariably frequent, but is not constantly either full or strong: we have, in several examples, found it small and soft, or even feeble; and the pulse not uncommonly rises both in force and fulness, after a moderate loss of blood. A peculiar expectoration, in which blood mingled with viscid mucus gave an appearance which obtained the appropriate epithet of rust-coloured, was, and still is, considered pathognomonic, or decisive of the presence of pneumonia; but it is to be borne in mind that pneumonia often exists without this mark, and is as often, perhaps in somewhat milder forms, accompanied by the expectoration of a mucus which is quite white and transparent, and so tenacious, that the vessel containing it may be held upside down without its falling out. We believe that the temperature of the skin, near the affected portion of the lung, is often raised above that of the general surface, as stated by Dr. Hughes. The symptoms which we have enumerated, and the general aspect of the case, will, to the experienced, often convey a sure knowledge of its nature; but for a more certain and unfailing guide which shall apprise us of the nature of the malady, even in doubtful cases, and of its extent and progress, in all recourse must be had to physical signs. The auscultatory sound by which pneumonia is made known, is peculiar, and most nearly approaches to that with which it has been compared, — viz. the sound produced by rubbing a portion of hair between the finger and thumb. It is a dry crackling noise, whence it is named the crepitating râle; and gives the idea of its being produced, as it probably is, by the bursting of small bubbles formed in some viscid medium. This sound belongs to the first stage of the inflammation, as it exists in any portion of the lung, and in the next stage is lost in the parts which before yielded it, to return again when something like the first stage is reproduced during the decline of the disease. As pneumonia generally commences in the lower part or base of the lung, it is often found that the crepitating râle heard first at the bottom of the chest gradually ascends, forming a band of separation between more natural respiration above and the dull noiseless condition of the parts that are below. We have called the parts thus left by crepitation noiseless; and they are destitute of the normal murmur of respiration, or any modification of that murmur, if we except the blowing sound which they often convey to the ear, and which has been called bronchial respiration, and the louder voice, termed bronchophony, which may also be heard in them. They are also readily perceived to conduct, better than in health, sounds from contiguous organs, as it may be of the heart, or any produced in the stomach; and if there be, as there often is, any simultaneous affection of the pleura, giving rise to some little effusion on its surface, both the bronchial respiration and the bronchial voice have that bleating accompaniment which characterises ægophony. When the disease presents a favourable course we have the parts last yielding the crepitating sound, giving first one of looser and moister description, and gradually exchanging this mucous rattle for the murmur of health; while those that were attacked earlier, and in which all trace of vesicular murmur had been lost, exhibit again the phenomena of a somewhat modified crepitating râle, and go through like changes, till the natural condition is restored. And thus in succession, and in an inverse order from that in which they were attacked, the parts return to their previous, or almost to their previous, state of soundness and activity. During these changes, ascertained by the stethoscope or ear applied to the chest, that which percussion detects is the loss of resonance or dulness, which extends with the spreading of the inflammation, and which recedes, as this is subdued, till the whole is almost as sonorous as before. With this dulness, however, there is no enlargement of the chest, no displacement of neighbouring organs, such as are observed in pleurisy and water on the chest.

We have thus traced the physical signs attending the advance to a certain point, and the subsequent disappearance of inflammation; but things do not always go on so favourably. The death of the patient may, of course, arrest these changes in any stage of their progress; or, if life be prolonged without those tendencies to recovery which we have here pourtrayed, other and more formidable signs of mischief may supervene.

We have said above that, under favourable circumstances, the chest, over a portion of previously hepatized lung, regains almost its natural resonance on percussion. We think that some dulness and some defect of respiratory murmur are apt to continue for a long while; and we are not prepared to say how far, in some instances, these defects may be permanent. If this be so it must depend, we conceive, upon that admixture of a plastic and an aplastic product of inflammation which Dr. Hodgkin declares to be very common in the ordinary, or, what he calls, intermediate forms of pneumonia. "Plastic inflammation of the lung," he says, speaking of it when existing alone, "is sometimes met with in adults, both in the lobular form, or more concentrated in one lobe or lung;" and, with respect to it, he adds, "I can scarcely conceive the possibility of absolute resolution taking place, and restoring the spongy texture of the lung."* The fact we have here noticed, and the explanation we have given of it is in accordance with Dr. Hasse's description of similar, but more aggravated, state of things. "In certain cases," he remarks, "the air-cells injured by inflammation do not recover their normal function (the secretion of elementary molecules); the effused substances do not liquefy, but become amalgamated with the parietes of the air-cells; and thus the part remains impervious. This obliteration of the hepatized structure is connected with vascular development in the effused product. The consequence seems to be permanent incapacity of the part for the office of respiration, gradual shrivelling of the pulmonary texture, sinking in of the wall of the thorax, and dilatation of the bronchial tubes throughout the previously hepatized lobe."†

Such, then, is, in some rare cases, the condition of imperfect recovery, which succeeds to the stage of red hepatization, where we fail in obtaining resolution; still it is a state compatible with the continuance of life, and desirable in comparison with the advance of the inflammation to the third stage, of purulent infiltration, or grey hepatization, which is almost invariably fatal.

Dr. Stokes, in speaking of the signs of the existence of purulent infiltration as one of the stages of pneumonia, says that "there is a combination of pneumonia which is almost peculiar to this state,—viz. bronchial respiration, with a sharp and peculiar muco-crepitating rattle;" pneumonia, he adds, "which, when taken in connection with the previous history and actual symptoms, leave no doubt as to the nature of the disease."‡ Dr. Walshe, however, tells us, that M. Grisolle's experience on this point leads him to doubt the perfect accuracy of Dr. Stokes's statement, while he admits, nevertheless, that the supervention of large humid crackling, or actually mucous rhonchus in a part of the lung which has for several days been the seat of blowing respiration, unmixed with crepitation, will justify the physician in *suspecting the occurrence of suppuration, provided the general symptoms have, at the same time, undergone change for the worse.* § Symptoms, confirmatory of this suspicion, are found in the expectoration of pus, or of such sputa as have been compared in appearance to prune juice. The previous durarion of the illness may have some bearing upon the probabilities of the case; but can afford us little sure guidance, since, as mentioned by Dr. Watson, the lung has sometimes been found in a state of suppuration on the fifth day of the disease, and sometimes in a state of red hepatization after fifteen or twenty days.* This author, indeed, does not hesitate to affirm that there are no certain and universal means for making the distinction between the second and third stages of the inflammation during life; a conclusion in which we believe that most candid observers will concur.

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* Lectures, ii. p. 96.

† An Anatomical Description, &c. translated by Dr. Swayne, p. 223.

‡ Diseases of the Chest, p. 328.

§ Physical Diagnosis of Diseases of the Lungs, 247.

The first grade of pneumonia seems to consist essentially in the capillary vessels of the parenchyma being gorged with blood, whereby the pulmonary cells, ordinarily filled with air, become for the most part contracted and more solid than before. The walls of these capillaries allow of an escape of their contents, and the tenacious rust-coloured and semi-transparent sputa form in the pulmonary vesicles and the minutest bronchial tubes. This first stage is designated by the term sanguineous infiltration, or splenization. In this state the lung is more than usually distended, and does not collapse on opening the chest. It is heavier than healthy lung, yet still floats in water. The surface is brown-red, alternately lighter and darker; it pits on pressure, and is far less tough and elastic than when healthy. On incision, a large quantity of frothy, and more or less deeply tinged, sanguineous fluid escapes. Sometimes, in two or three days, at others, in seven or eight, the second stage is established, in which the lung is dilated to its utmost capacity: it is condensed throughout, without a vestige of crepitation, of a lightish brown-red colour, and greatly softened, so as to be pretty easily broken down with the finger. The cut surface is rather dry, but on scraping the part, a little frothless fluid, of a dirty red colour, escapes. This condition has been termed hepatization, or red softening. In the third, or final stage, the lung remains the same in respect to volume, density, and total absence of crepitation; but the softening is more advanced, and the colour is changed to a dirty light grey, or a pale straw-colour. The purulent fluid is for the most part uniformly infiltrated throughout the whole pulmonary tissues in rare instances, choking up the air passages; or it occupies certain portions only, in the shape of abscesses. Wherever an incision is made, yellowish-grey fluid exudes in considerable quantity. This, then, is the stage of purulent infiltration, grey softening, or hepatization.

The appearances of the lung after death in pneumonia belong, of course, to that stage of the disease in which death occurs; andthis may be any one of the three just described. Where, however, the disease has passed on to the second or third stage, some portions will exhibit the marks of the preceding stages. So that, if there be considerable red hepatization, there will be in portions the signs of congestion or splenization also; and if there be grey hepatization, there will be in other portions red hepatization and congestion also. The pleura generally partakes more or less in the affection of the neighbouring lung, and may present a dull surface, or one on which a thin layer of coagulable lymph is deposited. The lining membrane of the bronchial tubes of the part affected is always reddened and inflamed.—(*Hasse's Pathological Anatomy.*)

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* Lectures, ii. 89.

Statistical observations have shown that where one lung only is affected, this happens more than twice as often to the right as to the left lung: both lungs are implicated in about one-ninth of all the cases of pneumonia.

The base of the lung is more frequently the seat of the commencement of inflammation than the apex, but not to the extent supposed by Laennec; indeed, pneumonia of the apex, or middle lobes, is not very infrequent.

In pneumonia, other things being equal, the peril must be increased in proportion to the extent of lung occupied by the disease, as ascertained by physical signs. If both lungs be engaged, the prognosis is generally unfavourable. Of all the symptoms, the difficulty of breathing affords the best index of the patient's condition, and little hope can be entertained for him if after bloodletting has been practised to the extent of increasing the frequency and abating the force of the pulse, this be not materially relieved. Delirium is a symptom of evil import, referred, according to the fashion of the day, to poisoned blood, of which poisoning there is no evidence, for lividity, in any considerable degree, is not a symptom of pneumonia.

The most general cause of peripneumony is the application of cold to the body, which gives a check to the perspiration, and determines a great flow of blood to the lungs. It attacks principally those of a robust constitution and plethoric habit; hence it is more frequently met with in men than women, and occurs most frequently in the winter season and spring of the year; but it may arise in any other season, when there are sudden vicissitudes from heat to cold.

Other causes, such as violent exertions in singing, speaking, or playing on wind instruments, by producing an increased action of the lungs, have been known to occasion peripneumony. Severe exercise, external injuries, a free indulgence in the use of fermented liquors, intemperance, repelled eruptions, suppressed evacuations, and metastasis from other diseases, such as gout, rheumatism, &c., may also give rise to it. Those who have laboured under a former attack of this complaint are much predisposed to returns of it. Pneumonia appears as a complication in several diseases, as measles, influenza, &c.

It has often distressed me, during the course of my practice, when called upon for advice in severe cases of pneumonia, to have observed many a life endangered, nay, sometimes sacrificed, by a trifling and insufficient abstraction of blood at the onset of the disease.

If a powerful impression is produced by the abstraction of a large quantity at first, the disease is suddenly arrested; or if the result is not so fortunate, the symptoms will become milder and more manageable, and may even not recur with such violence as to require a repetition of venesection. But the reverse of this picture deserves notice. If blood-letting has been too long deferred, or, from timidity in the practitioner or the patient, not largely employed in the first instance, the disease generally proves violent, tedious, untractable, and often fatal. It appears to be a matter of indifference from which arm the blood is taken away.

If the pain and difficulty of breathing continue violent, or return after a short interval, the bleeding may be repeated on the same day or succeeding one, and a proper quantity again be drawn off. When the inflammatory disposition is subdued, and the difficulty of breathing not very great, it will not be necessary to have recourse to the operation a second or third time. After expectoration has become free, it would be unnecessary to bleed.

Where there has been a considerable lapse of time, and the patient is old, or in a weak debilitated state, instead of repeating venesection a second or third time, we may apply several leeches, or the scarificator and cupping-glasses, to the chest, immediately over the part which is painful. In the pneumonia of infants this mode of drawing blood may be practised with great advantage after lessening the inflammatory action by venesection.

If the bowels require evacuation, strong purgatives ought not to be given, but gentle aperients of a cooling nature should be used, particularly at the commencement of the disease. It is a pretty general opinion, that active purgatives are not proper remedies in pneumonic inflammation, but, nevertheless, we should not neglect giving those of a mild nature, such as a solution of the sulphate of magnesia, &c., as prescribed below.*

With the view of subduing inflammation, and thereby assisting expectoration, we may give antimonials in nauseating doses. With these medicines† it will be proper to direct the patient to take frequent small draughts of some mild diluent liquor, such as barley-water or thin gruel, to which may be added a little lemon-juice, to give it a pleasing acidity.

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* ℞ Mannæ Optim. ʒiij.
Magnesiæ Sulph. ʒij.

Infus. Sennæ Compos. f. ℥jss. M.

Ft. haustus catharticus.

Vel,

℞ Ol. Ricini. f. ℥j.

† ℞ Pulv. Antimonial. gr. iij—vj.

Confect. Rosæ, gr. x. M.
Ft. Bolus, 3tiis horis sumendus.

* Take Manna, three drachms.
Sulphate of Magnesia, two drachms.
Compound Infusion of Senna, one ounce and a half.
Mix them for an aperient draught.

Or,

Take Castor Oil, one ounce.

† Take Antimonial Powder, three to six grains.
Confection of Roses, ten grains.
Mix them into a bolus, to be taken every three hours.

Nitre, and some other neutral salts*, will likewise produce a good effect in peripneumony, and may therefore be added to the solution of antimony.

After a sufficient abstraction of blood at the commencement of the disease, it has been proposed by some practitioners to give antimonial powder, and calomel combined, every three hours or oftener; continuing the medicine assiduously until the constitutional effects of the mercury are evident, when the pulmonic symptoms will usually give way.

In pneumonia, as in other sthenic inflammations, we conceive bloodletting to be our most powerful resource for combating the disease, but by no means our only one; nor one which it is advisable to employ with so free a hand as it often has been. When venesection has removed plethora, when it has reduced the *force* of the pulse to the standard of health, or a little below this point, it has effected all the good of which it is capable. Local bleeding, and antimonial or mercurial medicines will then exert a more directly beneficial influence on the capillary circulation, which is the seat of mischief. As respects general bloodletting, we would

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Vel, ℞ Pulv. Jacob. Ver. gr. vj. pro dos.	*Or,* Take James's Powder, six grains for a dose.
Vel, ℞ Antim. Tartarizat. gr. ij. Aq. distillat. f. ℥vij. Syrup. Rosæ, f. ʒij. Ft. Mist. cujus sumat cochl. ampla ij. tertiâ vel quartâ horâ.	*Or,* Take Tartarized Antimony, two grains. Distilled Water, seven ounces. Syrup of Roses, two drachms. Of this mixture two table-spoonfuls are to be taken every three or four hours.
* ℞ Succ. Limon. f. ℥jss.	* Take Lemon Juice, one ounce and a half.
Potassæ Carbonat. ʒj. Aq. Menthæ Virid. f. ℥j. Aq. Fontan. f. ℥iij. Potassæ Nitr. ʒss. Syrup. Tolutan. f. ℥ss. M.	Carbonate of Potass, one drachm. Mint Water, one ounce. Pure Water, three ounces. Nitrate of Potass, half a drachm. Syrup of Tolu Balsam, half an ounce.
Vini Ipecac. ʒij. Ft. Mistura, cujus sumat cochl. larga iij. pro dos. quartis horis.	Ipecacuanha Wine, two drachms. Of this mixture the dose may be three table-spoonfuls every four hours.
Vel, ℞ Liquor. Ammon. Acetat. f. ʒiij.	*Or,* Take Solution of Acetate of Ammonia, three drachms.
Aq. distillat. f. ℥j. Sp. Æther. Nitr. f. ʒss.	Distilled Water, an ounce. Spirit of Nitric Æther, half a drachm.
Vini Antimon. Tart. ♏xxx.	Wine of Tartarized Antimony, thirty minims.
Syrup. Simpl. f. ʒj. M. Ft. Haustus, quartis horis sumendus.	Common Syrup, one drachm. Mix them for a draught, to be taken every four hours.

guard our readers against excess in their first employment of it; or too great promptitude in their recurrence to it. In non-inflammatory congestion, or in that stage of inflammation of the lung, or other part in which no inflammatory deposit has yet taken place, venesection may be freely employed, and will speedily produce its utmost effect; but where hepatization of a large portion of the lung exists; where a considerable proportion of the whole mass of blood is for the time being, as it were, taken out of the circulation; and where effusion has to be reabsorbed before the affected lung can be freed; in such a case it seems to us imprudent either to draw too largely upon that portion of the circulating fluid, which is alone efficient for carrying on the general functions of the system, or to recur so speedily to venesection as not to allow time for the full operation of former depletion, in advancing the work of absorption. There is a practical criterion which we venture to lay down as a test of the propriety of previous bloodletting, and a guide as to the expediency of its repetition. This is of easy application, as it is founded on the relative frequency of the pulse, not upon the characters present, — such as strong or weak, hard or soft, contracted or labouring, with regard to which we believe that they are severally often predicated of states quite undistinguishable from those occurring within the limits of ordinary health. When bloodletting reduces the excessive frequency of the pulse, we are right in adopting it, and shall be right, if need be, in repeating it; but when the pulse has become decidedly more frequent, in consequence of bloodletting, we have depleted enough, perhaps in excess; and it becomes us to reflect if nutriment should not be given more freely than before; whether antimonials should not be diminished in dose, or replaced by light tonics to support the ebbing powers, and to allow time for the action of mercurials. The increased frequency of the pulse is in our view, under such circumstances, a proof that depletion has diminished constitutional power and increased general irritability in a greater ratio than it has abated the local disease. In reference to the employment of tartar emetic in this disease we would remark, that in our own practice we have invariably found from a twelfth to a fourth of a grain, repeated every three or four hours, an adequate dose controlling the circulation as much as we desired, and sometimes even producing too great depression; and this we believe will generally be the case where sufficient bloodletting has been premised. We own ourselves at a loss to imagine any advantage necessarily consequent upon the swallowing of one or two grain doses, which should lead us to strive to establish tolerance of them. Is not this to produce organic insensibility to the operation of a medicine, while we enlarge the dose in order to augment its action?

If we should have to treat a patient in the third stage when hectic fever, purulent, or prune juice, expectoration, and the signs which we have before described, lead us to believe that suppuration has taken place, there is little room for active remedies; and we shall best cherish the small chance of recovery which remains, by supporting the strength both by tonic remedies and by nourishing, but not stimulating, food. There is proof that large abscesses in the lungs may be healed, that considerable portions may be destroyed without entailing death; and our aim must be to keep our patient alive while nature is carrying out her own plans for his benefit. We must take care not to war; and we cannot greatly aid or accelerate those plans: they require time for their performance, and strength to bear the exhausting work of separation; while active inflammation is easily lighted up anew; and distress attends any interruption to the freedom of expectoration. In such cases such tonic medicines as are suited to the stage of convalescence, as the compound mixture of cascarilla, or decoction of bark in doses of an ounce and a half, with a drachm of syrup of poppies in the latter case; or even quinine may be tried, while the bowels are just regulated by an occasional dose of two or three drachms of epsom salts dissolved in peppermint water. If these remedies are well borne,—that is to say, if they abate rather than increase the heat of skin and thirst; if, while they check excessive secretion, they do not render expectoration difficult, nor augment the cough or shortness of breathing, — then there will be reason to go on, feeling our way as we advance, to admit wine or beer into our dietary, &c. &c., and to give quinine with a bolder hand. Decoction of senega is sometimes of service in the latter stages of pneumonia, and from three to five grains of sesquicarbonate of ammonia may be added to each dose. This is suited to typhoid pneumonia.

At the commencement of pneumonic inflammation, opiates would evidently prove injurious, by interrupting expectoration, and, therefore, they should not be prescribed in this stage of the disease: at least until previous bleeding and blistering have greatly relieved the difficulty of breathing and pain. In the more advanced stage of peripneumony, where a cough is the only urgent symptom, and proves the chief cause either of the continuance of the pain, or of the want of sleep, opiates will be highly useful, and may therefore be given in the form of a draught* to be taken about bed-time. When none of the preparations of opium can be administered with safety, we may substitute the extract of the hop, or inspissated juice of the lactuca sativa or garden lettuce, as recommended in Phthisis Pulmonalis, under the sanction of Dr. Duncan, of Edinburgh.

In pneumonia typhodes, the general plan of treatment should be a combination of that of typhus with the local treatment of pneumonia. Bleeding from the system might prove injurious, unless employed at the onset of the disease; and where the debility has been great, there are instances on record in which even topical blood-letting, by means of scarifications of the side, in this complaint, has become so obstinate and profuse as to baffle every attempt to stop it, till the patient expired. Dry cupping, together with fomentations, cataplasms, and rubefacient liniments, applied over the part, will be far more advisable in an advanced stage; the person at the same time drawing in with the breath watery vapours repeatedly throughout the day and night, by means of an inhaler. When there is a tendency to gangrene and hæmorrhage, blisters would be improper, both on account of the evacuation which they occasion, and because they sometimes give rise to dangerous sores.

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* ℞ Liquor. Ammon. Acetat. f. ʒiij.

Aquæ Menth. Virid. f. ℥j.
Tinct. Opii, ♏xx.
Syrup. Tolutan. f. ʒij.
Vini Antim. Tartarizat. ♏xij. M.

Ft. Haustus.

* Take Solution of Acetate of Ammonia, three drachms.
Mint Water, one ounce.
Tincture of Opium, twenty minims.
Syrup of Tolu Balsam, two drs.
Wine of Tartarized Antimony, twelve minims.
Mix them for a draught.

When the skin is very dry and hot, saline draughts, or the liquor ammoniæ acetatis, may be administered with advantage. To allay pain, ease the cough, stop diarrhœa when it arises, or procure sleep, we may employ opium.

To support the vital powers, and resist the tendency to putrescency, it will be right, in all cases of this species of pneumonia, to allow a moderate use of wine, proportioning the quantity to the degree of debility which is present. If the inflammatory symptoms do not run high, and the fever shows any tendency to remit, we may add a joint use of a decoction of the bark of cinchona.

When we have succeeded in removing the symptoms of pneumonia typhodes, and the patient has advanced to the state of convalescence, it will be necessary to have recourse to bitters and aromatics, in order to strengthen the stomach and system in general. — See Dyspepsia.

During the whole of the complaint, the patient should be confined to bed, lying with his head and shoulders as much elevated as possible; his chamber is to be kept of a proper temperature, neither below 50 nor above 60 degrees of heat; and his strength supported with food of a light nutritive nature, such as roasted or boiled apples, arrow-root, panado, &c. His drink should be thin gruel and barley-water, sweetened with honey, or a decoction of liquorice in which a small portion of currant jelly is dissolved, to give it a pleasing tartness. On recovery, he should carefully guard against any exposure to cold, or any irregularity which might occasion a relapse; for no inflammation is so apt to recur as the pneumonic, and a return of it might lay the foundation of phthisis pulmonalis.

PLEURITIS, OR PLEURISY.

Pleurisy is an inflammation of the membrane lining the chest and enveloping the lungs, attended with an acute pain in the side, which is aggravated on a full inspiration with a short and hard cough, pyrexia, and a quick and hard pulse. In some instances the inflammation is partial; or affects one spot in particular; but in general the morbid affection is communicated throughout a considerable extent of the side, and sometimes, though rarely, both sides of the chest are implicated in the disease.

It comes on with an acute pain in the side, which is much aggravated on making a full inspiration, and is accompanied by flushing in the face, increased heat over the whole body, thirst, rigors, some difficulty of breathing, and a hard short cough; and the pulse is hard, strong, and frequent, and vibrates under the finger when pressed upon, not unlike the tense string of a musical instrument; the tongue is furred, there is great restlessness, and the urine is high-coloured and scanty. When blood is drawn, and allowed to stand for a short time, it will be cupped, and exhibit a thick sizy or buffy coat on its surface, consisting of the coagulable lymph or fibrin.

The disease with which pleurisy is most likely to be confounded is that rheumatic affection of the intercostal muscles which has been termed pleurodyne. The circumstance that rheumatic pains are felt in other parts, at the same time that there is some uneasiness on moving the arm, or on turning in bed will generally serve to distinguish the latter from the former complaint. Something, too, is to be gathered from the manner in which the patient breathes: in both diseases deep inspiration is slowly and carefully performed, and expiration in pleurisy takes place with equal deliberation; whereas in pleurodyne the relaxation of the muscles gives relief, and the ribs are allowed rapidly to fall into the position which they have in moderate expiration.

The inflammation of the pleura is marked by different conditions of that membrane in successive stages. Thus there is probably at first a period of redness of the membrane, with dryness arising from the suspension of its natural secretion, but this, the first stage, is soon (that is, within a few hours, or even less) followed by effusion, at first of a thin layer only, later of a considerable quantity of a mixed serous and fibrinous fluid; or in some rare cases of blood; or, again, it may be more or less of a purulent character. The first we believe to be the most common character of the effusion, which, after having reached its extreme amount, gradually under the influence of remedial means as the inflammation abates, undergoes absorption, at least of its more liquid parts. There remains, however, a layer of coagulable lymph between the opposing surfaces of the pleura, which subsequently forms flattened bands, having all the appearance and properties of a true serous membrane, which bind the lung to the chest with more or less closeness.

The physical signs by which pleurisy is characterised, have considerable distinctness: at the commencement, and while the pain is severe, there is weakness of respiration, from the patient instinctively abstaining from using the affected side or part in this action; and when forced respiration is made, it is accompanied with a rubbing sound. At this period there is little or no dullness on percussion. As the quantity of fluid increases, the resonance of the chest diminishes more and more, this phenomenon extending from below upwards; while at the same time the sound of respiration become lost wherever the dullness is very marked. As the bulk of the fluid pushes the lung from its proximity to the wall of the chest, the rubbing sound as well as the murmur of respiration is lost. The side of the chest, too, presents changes to the eye. Thus there is a smoothness of external surface from the pressing out of the intercostal spaces, or even a bulging of these spaces, beyond the level of the ribs, and a roundness or increase of bulk compared with its opposite most observable at the extreme point of expiration; which act stops short on the affected side before it is completed on the other. If the bulk of the effusion be varied to an extreme amount, there will be an all but complete fixing of the distended side; the increased magnitude of which will be apparent even during inspiration, and may be ascertained, as at an earlier period, by measurement. Besides enlargement of the side itself, displacement of contiguous organs often assists the diagnosis. Thus the liver is thrust downwards in the cavity of the abdomen, where it may be distinctly felt in its new position, in cases of copious effusion, on the right side of the chest; while the spleen suffers a similar depression when it happens on the left; and the heart itself is also not infrequently transposed so as to be found beating on the right side of the sternum. When the quantity of fluid present is not excessive, while the body is upright, the upper parts of the chest will continue resonant, the lower completely dull; and it will seem too, that the fluid will move under the influence of gravity so that the anterior of the chest will give a clear, and the posterior a dull sound on percussion when the patient lies on his back. But where there is an extreme degree of fullness or distension from the fluid, there will in no part be any clear sound, and no murmur of respiration, as there may be in the former case; and change of position will produce no alteration. A remarkable phenomenon attendant on the existence of a thin layer of fluid upon the surface of the lung is the peculiar character, the kind of bleat, which this imparts to the voice whenever from the condensation of the lung the voice is audible. To the sound thus produced the term ægophony — signifying goat's voice — has been applied, and is considered diagnostic of the state of things just described. We doubt, however, whether this phenomenon ever occurs, unless some amount of pneumonia co-exists with the inflammation of the pleura. Be this as it may, it is certain that it appears only in the earlier stages of pleurisy, disappearing as the quantity of fluid increases, and returning as this again is reduced. At the same time the displaced viscera return to their natural positions, and respiration and percussion finally yield their normal, or almost their normal, sounds.

There are cases, however, in which the lung compressed against the spine, and in this state bound down by false membrane, is incapable of again expanding to its natural size; and then, when absorption of fluid takes place, the ribs are drawn downwards, and the whole side of the chest is visibly diminished, much restricted in its movements, and performs its functions very imperfectly, or not at all. There is, besides, a curving of the spine with its concavity to the injured side, and some falling of the shoulder, and tilting backwards of its posterior edge. For this condition, when it has long existed, we know of no remedy.

Where the effusion has consisted of pus, or of a less plastic material than occurs in simple pleurisy, absorption of the fluid is delayed, or prevented altogether, and we have a permanent empyema, or hydrothorax, existing in a chronic state. According to Dr. Hamilton Roe, the unnatural prominence or bulging of the intercostal spaces is due rather to the nature than the quantity of fluid effused within, and is observed chiefly, or exclusively, when that is purulent.

In pleurisy affecting the portion of the membrane which covers the diaphragm, in addition to the symptoms before detailed, we have pain more or less acute of the cartilaginous border of the false ribs, extending to the hypochondria, and even to the flanks; thoracic respiration, and an inclination of the body forwards; and, besides all this, we have occasionally hiccup, nausea, vomiting, or jaundice.

Pleurisy is often associated with more or less inflammation of the substance of the lung, the one disease tending to produce some degree of the other, whichever may be the primary one; or they may spring simultaneously from a common cause.

The disease is occasioned by exposure to cold, and by all the causes which usually give rise to other inflammatory complaints.

The prognostic in pleurisy must be drawn from the severity of the symptoms. If the fever and inflammation have run high, and the pain should cease suddenly, with a change of countenance and a sinking of the pulse, great danger may be apprehended; but if the heat and other febrile symptoms abate gradually, if respiration is performed with greater ease and less pain, and the physical signs denote that absorption is going on, a speedy recovery may be looked for.

In the treatment of pleurisy, our chief attention must be directed to the removal of the inflammation, by bleeding at an early period of the complaint, the pulse being our guide, and the age and constitution of the patient taken into consideration. While the pulse remains full and hard, the pain in the side acute, the breathing difficult, and the blood drawn off continues to exhibit a sizy crust on its surface when cool, and appears cupped, so long ought we to repeat the operation; with this exception, that after a free expectoration has commenced, it will be injurious.

Here it is proper to mention, that physicians have been struck at all times with the effect produced by taking the blood from a large orifice in inflammatory diseases; and it is certainly a step which cannot be too strongly urged, but more particularly in pleuritis and pneumonia. It is true, that from a small orifice an equal quantity of blood may be taken as from a large one; but the time of its flowing is so long, that the topical inflammation, which demands for its relief a sudden effect upon the system, is not much influenced by it, though the general strength is greatly reduced, which is an occurrence to be avoided as much as possible in a disease that may require a repetition of the operation.

Pleurisy and peripneumony are complaints in which an early use of the lancet is commonly of the most urgent and indispensable necessity. If blood-letting be had recourse to at a proper period, and to a sufficient extent (which of course must vary according to the symptoms of the disease, and the constitutional habit and age of the patient), it will seldom fail, with very little further aid, to remove a disease that otherwise might, and not unfrequently does, in a very short time terminate in death.

When venesection has been carried as far as it can be consistently with the welfare of the patient; when the feebleness of the pulse shows that it is not by the power of the general circulation that the inflammation is kept up; some advantage may often be procured by putting on leeches, whereby the loaded vessels may be emptied of their contents and at a yet later period: when the acute stage is past, the application of blisters is of use.

To assist in depressing excessive action, antimonial medicines are of primary importance *; the employment of these will render a less amount of bleeding necessary, and has this advantage, that the prostration it occasions ceases with its omission, so that it is a means of husbanding that strength which can not be readily restored if it have been too much reduced by blood-letting. There is no benefit to be derived from very active purging; but the bowels should be freely opened at first by some such draught as that prescribed below †; and this may, if necessary, be repeated every third or fourth day. It does not appear desirable to have recourse in all cases to mercury; but where the affection is very extensive and severe, we should exhibit it freely at the same time as antimony; or, at a later period, if the disease seemed passing into a chronic form, we should try to promote absorption by its slower and more continued action. If it be thought right to give

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* ℞ Antimonii Potassio-tart. gr. iss. ad gr. iij.
Aquæ distillatæ, ℥vss.
Syrup. Tolutan. ℥ss.
Solve. Sumat sextam partem quartâ quâque horâ.

† ℞ Infusi Sennæ Comp. ℥iss.
Magnesiæ Sulphat. ℥ss.
Mannæ, ʒj.
Misce: fiat haustus, p. r. n. capiendus.

* Take Tartarized Antimony one and a half to three grains.
Distilled Water, five ounces and a half.
Syrup of Tolu Balsam, half an ounce.
Dissolve. Let a sixth part be taken every fourth hour.

† Take Compound Infusion of Senna, an ounce and a half.
Epsom Salts, half an ounce.
Manna, a drachm.
Make a draught to be taken as occasion requires.

mercury from the commencement, it should at first be given without opium*, that this may not mask the symptoms; but when we have bled freely, and given antimony and mercury for a day or more, even though the pain is relieved, Dover's Powder† may be advantageously combined with the calomel, if there be occasion for its continuance, in order to calm irritation, to procure rest, and to diminish the need of respiration.

If the febrile symptoms are declining, and have nearly ceased, while yet absorption has made no progress, or a very inadequate one, a milder mercurial treatment should either now commence or take the place of that which has preceded, and it will be well to give it a diuretic tendency.‡ And now, instead of antimonials, some gentle tonic may accompany the pill, and this also may be made to conduce to the diuretic effect.§ At the same time, an improvement should take place in the hitherto very restricted diet of the patient, that, having passed the more severe, he may bear the more tedious trial which may still await him.

Throughout the whole course of the disease, the patient is to abstain from animal food and from all kinds of fermented and spirituous liquors, supporting his strength with gruel, sago, preparations of barley and such-like vegetable productions. On his recovery, he is carefully to guard against any fresh exposure to cold, as a return of the complaint might be attended with worse consequences than the first attack.

Is has been mentioned, that empyema, or a collection of pus, is one of the terminations of pleuritis: where this happens, and a fluctuation can be perceived, the thorax must be punctured to evacuate the matter.

Much difference of opinion exists with respect to the advantages of tapping in empyema. It is beyond doubt, that in some cases it is not required, since they may be relieved as certainly and

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* ℞ Hydrargyri Chlorid. gr. xij. Pil. Hydrarg. ℈j. Confect. Rosæ, q. s. Fiant pil. vj. e quibus sumat j quartâ quâque horâ.	* Take Calomel, twelve grains. Blue pill, a scruple. Confection of Roses, enough. Make six pills, of which let one be taken every four hours.
† Vel, ℞ Hydrargyri Chloridi, gr. xij. Pulv. Ipecac. Comp. gr. xx. Mistur. Acac. q. s. Fiant pil. vj, ut supra dandæ.	† Or, Take Calomel, twelve grains. Dover's Powder, twenty grains. Mucilage enough. Make six pills, to be taken as above.
‡ ℞ Pil. Hydrargyri, gr. x. Pulv. Scillæ exsicc. gr. iij. Pulv. Digital. gr. iss. Syrup. q. s. Fiant pil. iij e quibus sumat æger j ter die.	‡ Take Blue Pill, ten grains. Dry Squill in powder, three grains. Dry Digitalis in powder, a grain and a half. Syrup, enough. Make three pills, of which let the patient take one three times a day.
§ ℞ Infus. Gentian. Comp. ℥iij. Aquæ puræ, ℥iss. Potassæ Nitrat. ℈j. Misc. sumat tertiam partem ter die.	§ Take Compound Infusion of Gentian, three ounces. Water, an ounce and a half. Nitrate of Potass, a scruple. Mix: let a third part be taken thrice a day.

probably, as speedily, without it. It is equally beyond a doubt that there are other cases where the difficulty of breathing is so great, and the relief to be hoped from other means so slow, that the operation becomes necessary, in order to ward off the present danger, and to gain time.

But there are other cases differing from both of these in which a trial of other means has led us to doubt, if not to despair, of their success, while, though the inconvenience be considerable, there is little immediate danger. What are we to do here? Are we, by a simple operation, to relieve the sufferer of his load, or are we to advise him to bear with it to the end? We have no very convincing evidence of the direct curative power of tapping. Dr. H. M. Hughes concludes his interesting papers on this subject, published in the Second Volume of the Medical Gazette for 1846, with no higher commendation of this treatment than the following. "It must be recollected that in many of the cases the operation of paracentesis was proposed and performed with the view of relieving existing symptoms, rather than that of ultimately curing the patient. In persons suffering from phthisis and malignant disease, it could not be expected to do more than this; this, in most, not in all cases, it effected. But whether the operation was followed by the cure of the complaint; whether it merely afforded relief to existing symptoms, or afforded no relief; I am not aware that it was the direct cause of injury in a single instance. The immediate consequences of the operation are, in most cases, as we have ourselves witnessed, very comforting and encouraging to the patient, though the lung on the side affected may not expand or make any progress towards the recovery of the function, yet the neighbouring organs which have been displaced regain their natural positions, and the unaffected side and lung are much more free in their actions than before. The improvement, however, is often not progressive; some febrile irritation comes on, or latent malady, as phthisis develops itself, and the patient sinks in the end. We are disposed to apply the same rule in this instance, which judicious surgeons are wont to act upon in deciding on the propriety of amputating a limb. As long as the constitution holds up, or is but slightly injured by the local malady, we would defer the operation; when the complaint is manifestly impairing the health and vigour, we would at once recommend it."

ENDOCARDITIS.

Inflammation of the lining membrane of the heart.—The inner membrane of the heart, called endocardium, may exhibit after death preternatural redness as the only deviation from its ordinary condition. But this appearance by itself affords no satisfactory evidence of the previous existence of inflammation. More frequently, either accompanying this redness or without it, we find softening, or thickening of the membrane itself, or of the subjacent cellular tissue, or fibrinous deposits on the free or attached surface of the membrane. Sometimes alterations are met with in the inside of the heart, and pus may be formed there; but this is for the most part carried away in the current of the blood. Particular portions of the endocardium, as those near the attachments of the valves, and those forming the valves themselves, are more prone than others to be attacked by inflammation. Hence, often arise inequalities, or morbid growths near the orifices of the heart, modifying more or less the flow of blood from the auricles to the ventricles, or from the ventricles to the great arterial trunks. Or, again, the valves may be so affected by puckering, or thickening, or deposits, as to perform their office imperfectly, and to allow of regurgitation of blood either from the great vessels into the ventricles, or from the ventricles into the auricles. These mischiefs, which are frequent on the left side of the heart, are much less common, and may be considered rare on the right. Regurgitation at the mitral valve is considered by Dr. Hope as the most frequent of all the consequences of valvular disease.

SYMPTOMS.—Recent endocarditis being rarely witnessed except as an accompaniment of rheumatic fever, it is difficult to mark the symptoms which pertain exclusively to the local disease. It is certain that these may be so slight as not to attract the attention of either the patient or his medical attendant. Hence, the necessity, universally admitted, of resorting to the physical means of discovering it in all cases of acute rheumatism, and that not once only, but daily, during the continuance of this last affection.

The symptoms of endocarditis mentioned by authors are the following: — a marked febrile condition, with dry skin, and thirst; a flushed face, and anxious countenance; slight acceleration of the breathing; a full, hard, and strong, pulse in some cases; a feeble, irregular, and intermittent one in some; pain or uneasiness about the region of the heart: any or all of these are often absent, however, and they are not characteristic of disease when present.

PHYSICAL SIGNS. — Occasionally, there is dulness over the heart to a greater extent than natural; and sometimes this increase of dulness is very considerable. The impulse of the heart is somewhat augmented in most cases. The distinctive sign is a murmur, taking the place of one or both sounds. Most frequently, however, only one of the sounds is thus changed, and this is most commonly the first. This murmur may be heard most distinctly either a little below and outside the left nipple, at about an inch above the spot where the impulse is felt; or near to the left side of the breast bone, on a level with the lower edge of the third rib. If it be loudest in this last position, it will be perceived along the upper part of the breast bone also. If most distinct in the situation first spoken of, — that is, near the apex of the heart,— it indicates, when replacing the first sound, an affection of the auriculo-ventricular valves, most probably of the mitral, permitting some regurgitation from the ventricle into the auricle. If loudest in the latter spot, near the base of the heart, and heard along the breast, it signifies an affection of the semilunar valves, most probably of those of the aorta, causing some impediment to the direct current of the blood. If the murmur replace the second sound, and be heard most clearly in the former spot, it indicates some impediment to the blood flowing from the auricle into the ventricle. This combination of circumstances is, however, very rarely met with. If such a murmur is most distinct in the latter point, near the base of the heart, it is an evidence of some affection of the semilunar valves, most probably of those of the aorta, permitting regurgitation into the ventricle.

It may assist the memory to notice that these endocardial murmurs have been appropriately classed by Dr. C. J. B. Williams as obstructive and regurgitant. Thus, the murmur is obstructive when it is produced by blood flowing in its normal direction, and meeting some impediment or obstruction, which gives rise to a sound differing from the natural one. It is a regurgitant murmur when it is produced by some portion of the blood returning in a direction contrary to that of its proper course, in consequence of imperfect closure of the valves. We must farther bear in mind, that a murmur replacing the first sound, since it accompanies the contractions of the ventricles, must always be produced by blood passing out of the ventricles. If, then, this murmur can be traced to the arterial orifices or valves, it must be obstructive, since here the blood is flowing in its proper direction. But if the same murmur be referrible to the auriculo-ventricular orifices, or valves, it must be regurgitant, since any blood issuing through them must be going backwards. Again, let it be remembered that a murmur replacing the second sound, as it accompanies the dilatation of the ventricles, must be produced by blood flowing into the ventricles. If, then, this murmur can be traced to the auriculo-ventricular orifices, or valves, it must be obstructive, since it occurs in blood pursuing its natural course. But if this murmur can be proved to originate in the arterial orifices or valves, it must be regurgitant, since blood entering here is moving in a retrograde direction.

When a murmur takes the place of the first sound, there is a modification in the character of the sound, but no change in the time of its duration. But when a murmur takes the place of the second sound, not only is there an alteration of tone, but the duration is greatly increased; the murmur being prolonged at the expense of the rest, and scarcely terminating till the first sound recommences. The murmur of endocarditis differs from that of pericarditis, in the following particulars: The former is generally single: that is, it replaces only one of the natural sounds; the latter is generally double: that is, it modifies both of them. The former is less rough than the latter, and gives the impression of greater distance from the ear, and is wont to be heard more extensively beyond the region of the heart, particularly in the course of the arteries. The murmur of endocarditis preserves its tone and seat unchanged, and rarely disappears; that of pericarditis changes its character from day to day, and its seat also; is often lost for a time, and then returns to disappear at last altogether. In endocarditis the natural sounds are lost in the abnormal murmurs. In pericarditis the natural sounds are only observed by superadded ones, and therefore the former can sometimes be distinctly recognised.

The means of diagnosis here pointed out will afford a sufficient guide in all cases of recent acute disease, where the heart suffers for the first time. But when we see a patient labouring under a recent affection of the heart, in whom that organ had suffered previously, in a manner and to a degree that is unknown, the diagnosis of the new affection becomes much more difficult. In such a case we may derive some assistance from a careful inquiry into its history; but even then we shall sometimes fail in establishing the precise nature of the malady.

Causes. — Attacks of acute rheumatism are prone to produce inflammation both of the lining and investing membranes of the heart, but of the former much more frequently than of the latter. In próof of this we may adduce the experience of Dr. P. Latham, who found the heart affected in ninety out of one hundred and thirty-six cases of acute rheumatism; the lining membrane alone being the seat of disease in sixty-three, the pericardium alone in seven, and both membranes being simultaneously attacked in eleven, while in nine the site of the mischief was not precisely ascertained.

The opinion was formerly entertained that the heart suffered in instances such as these, in consequence of what was termed metastasis, — that is, a translation of the disease from the limbs to that organ. More exact observation has, however, shown that this opinion was ill-founded; that the heart may be attacked at the same time as the limbs; and that it is matter of frequent occurrence for it to become involved while as yet there is no abatement of the rheumatism in other parts.

We believe that Bright's disease of the kidney is often associated with endocardial or valvular disease; but in this case the mischief is produced by a more gradual and insidious process; and it may be doubted whether it is due to inflammation at all.

Treatment. — Although general experience has shown that the immediate peril to life is very small as arising from acute endocarditis; yet on account of the injury caused to the mechanism of the heart, and the secondary evil consequences that are likely to result, it is necessary that the treatment should be prompt and energetic. On the first intimation of the existence of this affection bleeding from a vein, and in a full stream, should be practised to such an extent as to produce a marked influence upon the circulation. And if the symptoms be urgent, and the constitution of the patient robust, it may be necessary to repeat the bleeding within

24 or 48 hours: or instead of, or after, this second detraction of blood, ten or twelve leeches may be applied once or more to the region of the heart. But we neither recognize the soundness in theory nor the advantage in practice of very large depletions, which have been sometimes resorted to. We may observe, too, that some of those who have carried bleeding to its greatest extent have furnished the most numerous opportunities for the study of the necroscopical appearances to be met with in this disease when recent. To us it appears manifest that, as in an enfeebled constitution inflammation has a more dangerous course, and worse consequences than in a sound or robust one, it must be disadvantageous, during the progress of inflammation, to bring a healthy frame to a condition of excessive and permanent debility. We recommend, therefore, that along with bleeding and after it, remedies of an antiphlogistic character, which have the power of temporarily depressing the heart's action should be administered. Colchicum too may be employed, with a prospect of benefit, in a disease which has somewhat of the specific character of rheumatism. We subjoin a formula below.* Opium should be given to allay constitutional irritation, and to procure calm, if not sleep; and mercury should be combined with this†; and mercurial ointment rubbed in.‡ Mercurial action is our sheet anchor for arresting farther mischief, and remedying as far as possible that which has been already done: but antiphlogistic medicines are useful adjuvants, and promote, besides, the action of the mineral itself. During the continuance of these means the diet should be scanty, and almost exclusively farinaceous. Milk, however, or a fresh egg or two may be allowed. A mild aperient should be administered occasionally, if the bowels do not act sufficiently of themselves.

Under this treatment, the general rheumatism will soon disappear; but not so the local affection of the heart. We think it

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* ℞ Liquor. Ammoniæ Acet. ʒij.	* Take Liquor of Acetate of Ammonia, two drachms.
Vini Antimon. Potassio-tart. ♏xx.	Wine of Tartarized Antimony, twenty minims.
Tinctur. Colchici, ♏vj vel ♏x.	Tincture of Colchicum, six or ten drops.
Misturæ Camphoræ, ʒviiiss.	Camphor mixture, eight drachms and a half.
Syrup. ʒj.	Syrup, one drachm.
Misce: fiat haustus quartâ quâque horâ adhibendus.	Make a draught to be given every four hours.
† ℞ Pulv. Opii gr. ss. Hydrarg. Chlorid. gr. ij. Confection. Rosæ, q. s.	† Take Powdered Opium, half a grain. Calomel, two grains. Conserve of Roses, a sufficient quantity.
Fiat pil. quartâ quâque horâ sumenda.	Make a pill to be taken every four hours.
‡ ℞ Unguent. Hydrarg. fortior. ʒj.	‡ Take Stronger Mercurial Ointment, one drachm.
Omni nocte maneque internis femorum partibus infricandum.	To be rubbed night and morning on the inside of the thighs.

desirable, when it can be effected, to produce mild ptyalism; when this has been obtained, which is not always an easy task, we have done all that we can for our patient: we have given him every chance, and it is our duty to do no less. But even then the local mischief will almost always remain unremedied. If then a mild mercurial action has been produced—or even before this when it is long delayed; at any time in fact if the febrile symptoms have disappeared, and those of irritation have taken their place; when the patient is languid, and feeble, and restless, with a cool perspiring skin, and rapid, throbbing pulse, we would no longer continue the plan of treatment just indicated—but pass at once to the administration of bark *, and gradually and cautiously improve the diet, so as to fortify the constitution against an evil which we must despair of removing.

The infusion of digitalis has been freely resorted to by some in the treatment of hydrothorax, or empyema for producing diuresis, and promoting absorption of the fluid. In one case we have seen an ounce of the infusion given thrice a day, while a mild mercurial course was carried to salivation. Here the result appears to have been very satisfactory. The difficulty of breathing having been relieved, and the distension of the affected pleural cavity having been restored, and the sound of respiration having returned. But time is yet wanting to establish the permanency of the benefit. Again we insist upon the necessity of watching its constitutional effects while employing so dangerous a medicine as digitalis.

PERICARDITIS, OR INFLAMMATION OF THE PERICARDIUM.

The pericardium belongs to the class of fibro-serous membranes, and consists of two layers, — an external fibrous and an internal serous. The fibrous layer is strong and resisting, though having but little thickness; it forms what is called the sac of the pericardium, and encloses the heart and the origin of the large vessels which come off from its base. The serous layer is thin and delicate in comparison; it closely invests the heart, covers the origin of the large vessels, and is then reflected upon the internal surface of the fibrous layer which it lines throughout.

The pericardial sac has a pyriform shape, the base below, the apex above: exactly the reverse of that of the heart. Its base is

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* ℞ Decoct. Cinchon. flavæ ʒxj.	* Take Decoction of yellow Bark, eleven drachms.
Sodæ Sesquicarb. gr. xv.	Sesquicarbonate of Soda, fifteen grains.
Syrup. Aurantii, ʒj.	Syrup of Orange Peel, one drachm.
Misce fiat haustus ter die sumendus.	Mix, and make a draught, to be taken thrice daily.

on a line with the upper part of the xyphoid cartilage; its apex a short distance above the origin of the large vessels, and generally on a line with the articulation of the second ribs with the sternum. It has, however, been found to extend, in a healthy subject, as high as the level of the articulation of the first ribs with the sternum. The pericardial sac is wider in the centre than at its base.

Such is the description of this membrane which we meet with in the lectures of one of the most recent authors on heart diseases, Dr. O'Bryen Bellingham.* It is, however, only the serous portion which appears to be engaged in inflammation; the fibrous is possessed of interest chiefly as regulating the site and extent of the encroachment which may take place on the other thoracic contents when the sac is distended with fluid.

The belief that pericarditis is very infrequent except in connection with acute rheumatism, was prevalent till within the last few years, even among the best authors on the subject of diseases of the heart. Thus we find Dr. P. Latham writing to the following effect: "My own experience of pericarditis is mainly derived from what it is as an accompaniment of acute rheumatism. I have seen the disease, indeed, under other circumstances; but it has been very seldom; so seldom, indeed, that I have little acquaintance with other conditions external or internal as conducing to it. I can neither tell whence to look for it, nor when to expect it, except when it occurs as a part of acute rheumatism. . . . Separate from acute rheumatism, even the practice of a large hospital does not present me with more than an instance or two of it in several years."†

Other writers, and pre-eminently, Dr. Taylor, have since pointed out its not infrequent combination with other diseases, as particularly with Bright's disease of the kidney, and with pleurisy; as well as its occasional occurrence in the course of the exanthemata and of continued fevers. It would seem indeed to be rarely or never a solitary or independent disease, and its aspect must of course present some diversities according to the different combinations in which it arises. Its symptoms must vary, too, not only with those of the complaint with which it is associated, but also according to its own intensity, and the suddenness, or gradual manner, of its attack. Thus, in not a few examples of its co-existence with rheumatic fever, the proper symptoms of pericarditis are so masked or so mild, that the disease would no doubt often escape detection but for the diligence with which the known frequency of this combination causes it under such circumstances to be sought out. Dr. Kirkes infers from this admitted fact, that it may at times be altogether overlooked when accompanying other maladies, as continued fever, and this must be admitted to be a probable conjecture, which furnishes us, however, with no data whatever for determining how often it is thus associated. As relates to the frequency of combined rheumatism and pericarditis, we think that Dr. P. Latham's observations recording this occurrence in eighteen out of 136 instances of acute rheumatism may in all probability be taken as a standard not far from the truth; or at least, nearer than the estimates of those who make the proportion much greater. Our own experience, which is rather extensive, in the field of acute rheumatism, convinces us, that it is in comparatively few cases that the pericardium suffers, while in a majority, the heart and its membranes remain altogether unscathed. Dr. Taylor in his elaborate paper in the 28th volume of the "Medico Chirurgical Transactions" already referred to, considers (p. 564) that acute rheumatism and Bright's disease *in its advanced stages*, have an equal tendency to produce pericarditis and endocarditis. Rheumatic pericarditis is by this author, in another work, asserted to be far milder than its other or non-rheumatic forms, and to produce a mortality equal to only half that of these last; and this is what our own experience of the extreme severity of the malady in a few examples where it has attacked the subjects of old standing affection of the kidney, would lead us to believe.

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* Med. Gaz. i. 1850. 177.

† Lectures on the Heart, i. p. 136.

It seems very common when the pericardium is suffering under rheumatic inflammation for the inner membrane of the heart to be similarly affected at the same time. Thus, Dr. Watson, after describing the morbid appearances of pericarditis fatal in the acute stage as seen on the outside of the heart, asks, "but what do we find within?" and goes on to reply, "why here also in *all* cases, *probably*, certainly in by far the majority of cases, we discover evident traces of active inflammation." * Of Dr. Latham's eighteen cases of pericarditis, also, there were eleven (a majority) which were judged to be complicated with endocarditis; and in all his fatal cases, the two diseases were found to coexist.

Dr. Hope, too, has asserted the same fact, when he states, that he has found the valvular murmurs of endocarditis to exist in the immense majority of cases of pericarditis.† He errs, however, when in this passage he considers these valvular murmurs entitled to rank as presumptive signs of pericarditis; since his own and the other evidence serves to show the rarity of pericarditis without endocarditis; not that of the latter without the former disease. And Dr. Latham's observations of sixty-three cases of rheumatic endocarditis existing alone, even when allowance is made for the probable admission of cases of old valvular disease, show that Dr. Hope's proposition is scarcely tenable.

Among the general symptoms of pericarditis, a certain expression of anguish, or anxiety of countenance should not be overlooked; not that this is by any means a constant appearance, but that when present it is always indicative of some important internal derangement, and therefore, under circumstances in which the heart is likely to be affected, should call attention to that organ.

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* Lectures, 3rd edition, 1848, ii. p. 234.

† Hope on the Diseases of the Heart, 1839, p. 172.

Pain in the region of the heart, of very variable character and intensity, is among the symptoms of this disease: sometimes it is acute and agonising, sometimes it amounts to no more than a sense of oppression or constriction; often it is not a subject of complaint by the patient, and only heard of when inquired for by the medical attendant; and sometimes there is no pain whatever. Then, too, there is said to be tenderness over the heart and epigastrium, detected on pressing with the finger in the spaces between the ribs, or the pit of the stomach, upwards and a little towards the left. But this symptom, again, whether absent or present, we consider not entitled to much confidence, and dependent, occasionally at least, as much upon the modus operandi of the examiner as upon the condition of the patient. The embarrassment of respiration, in whatever degree it occurs, may be considered as confirmatory of other symptoms of pericarditis; orthopnœa (impossibility of breathing in a horizontal position) is of occasional occurrence, and was for a time believed to mark the occurrence of a liquid as distinguished from a fibrinous effusion, especially when this symptom is combined with immobility and a tendency to syncope. But Dr. Taylor * has shaken this belief by the publication of instances of serous effusion without any orthopnœa, and of others, again, of orthopnœa without liquid effusion. The posture of the patient has seemed to us, in examples of the rheumatic variety at least, to be determined by the complicating malady; his swollen joints and aching limbs making him lie, for the most part, immovably upon his back, and his perfect quietness causing the excitement of the heart and any difficulty of breathing to be less put to the test than under ordinary circumstances. Then, too, the character of the pulse, as well as the existing pyrexia, have often seemed to belong to the rheumatism rather than to the heart disease. The pulse, indeed, seems to have in it nothing very distinctive, since in Dr. Taylor's cases, taken together, it was found to have been very often regular, sometimes rather full and jerking, sometimes irregular or intermitting for a time, and sometimes thready.† Although, therefore, pericarditis, when accompanied by anxiety of countenance, and local pain, and well-ascertained tenderness, and some distress of breathing, and oppression or disturbance of the pulse, can scarcely fail to be recognised with ease, yet the common occurrence of cases, as allowed by the best observers, in which several or all of these symptoms are wanting, make it necessary that we should not acquiesce in the soundness of the heart where they did not present themselves; and make it desirable, in all cases where experience has proved even a remote probability of the co-existence of heart affection, that we should appeal for dis-

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* B. and F. Review, xxiv. p. 536.

† Ibid. p. 558.

covery, or for more certain diagnosis, to the surer guidance of physical signs. Yet, before describing these, we cannot resist the temptation of strengthening the foregoing position, and throwing some further light upon our subject by the citation of a passage from Dr. Latham's Lectures [*], wherein he writes: "My experience tells me that, in acute pericarditis, the pain, if it occur at all, almost always occurs early. The first access of inflammation generally produces it, as well in the pericardium as in other parts; yet early as is the pain, the murmur is often earlier. But, of all symptoms, mere pain is the most inconstant and uncertain, whatever be the disease. It is so in pericarditis. It is present in one case, it is absent in another strangely and unaccountably. I have known much pain when the disease has been of little severity and short duration, and of easy cure; and I have known the severest pericarditis pass through all its stages without any pain. All other symptoms have been present to mark its reality and its progress,—the murmur and the præcordial dulness, and the fluttering heart, and the respiratory anguish. And sometimes the patient has died, and sometimes he has escaped by a tardy and precarious convalescence. But, from first to last, there has been no pain." One general symptom, entitled to much weight as awakening suspicion of, and confirming a belief in the existence of pericarditis, is the superaddition of delirium in patients suffering from rheumatic fever in whom it had not previously existed, and in whose condition there has been no other change to account for its occurrence. Other disturbances of the cerebro-spinal systems, as coma and tetanus, and more especially chorea, are known to have manifested themselves in connection with pericarditis, so frequently as to demand a passing allusion to these nervous phenomena, in order that, in anomalous instances of their occurrence, the medical attendant may be led to institute a careful examination of the condition of the heart. Tardy cases have been detailed by Dr. R. Bright, in the 22d volume of the "Medico-Chirurgical Transactions," under the head of "Cases of spasmodic Diseases accompanying Affections of the Pericardium;" while this connection of cardaic and cerebro-spinal diseases has been dwelt upon more at large by Dr. G. Burrows, in one of the Lumleian Lectures for 1843 [†], who does not hesitate to say that there is scarcely a disease of the cerebro-spinal system which may not be simulated by inflammatory diseases of the heart and its membranes. [‡] The fact of this connection, for the reasons already stated, concerns us much more nearly than the explanation of it. As regards this latter point we find the two learned physicians just referred to considering it as an illustration of cecentric or excito-motory irritation, in some cases propagated through the phrenic nerves, and in others through the pneumo-gastric. [§] Dr. Taylor, however, repudiating or all but repudiating, the idiopathic origin of pericarditis, and adverting to the extreme fatality of these examples of heart affection, as well as to the negative fact, that in few or none of them has the condition of the kidneys or urine been investigated, inclines to the belief that, in some instances at least, the cardiac and nervous affections do not stand in the relation of cause and effect, but that they are common results of Bright's disease of the kidney.* Dr. Kirkes conceives that the occasional occurrence of chorea in articular rheumatism uncomplicated by any decided cardiac affection, and the occasional occurrence of chorea previous to the onset of rheumatism or of any affection of the heart, suggest an inquiry whether there is not some more general cause for the association between the chorea and the rheumatism, than that ascribed to an affection of the heart or pericardium. Hence he is led to acquiesce in Dr. Begbie's view, that the same diathesis or morbid condition of the blood which gives rise to rheumatism, may give rise to chorea also.† Now we regard these different views as by no means incompatible or inconsistent, believing that the nervous phenomena referred to may have any of these several origins, namely, in incident irritation or in blood variously deteriorated. A consideration of these theories may be of service in adapting the appropriate treatment to the several examples of disease, while whatever be their worth, the acknowledged frequency of the coincidences which they are brought forward to explain, give these nervous phenomena a vast practical importance in reference to inflammations of the heart, as indirectly suggesting their presence in most fatal, though otherwise in all but latent forms.

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[*] P. 141.

[†] Medical Gaz. xxxii. p. 289.

[‡] Medical Gaz. xxxii. p. 291.

[§] Ibid. p. 297.

The physical signs of pericarditis consist in various rubbing sounds, produced by the attrition of opposed surfaces, when these become dry from deficient secretion, or roughened by coagulable lymph more or less blended with serum. These sounds are accompanied at times by a thrill or vibration which, in extreme cases, may be perceptible both to the sight and touch in the interspaces between the ribs immediately over the heart; in more numerous examples it is recognisable only by the touch, and in very many it is absent altogether. It is considered a character of these abnormal sounds or murmurs that they are generally, if not universally double, audible that is both with the systole and diastole of the heart, and that they impress the ear with the idea of motion in opposite directions whence they have been designated as to and fro, or *vien et va* sounds. Another peculiarity attributed to them is that of very limited persistence, it being alleged that, after a few days or sooner, they are wont to disappear on the wider separation of the surfaces of the pericardial membrane, by an augmented bulk of effused material, to return again on its partial absorption, and finally to disappear altogether when false membranes have more or less completely obliterated the cavity of the pericardium. From one part of this the generally received belief we have a dissentient entitled to be heard in Dr. Latham, who writes, that "if the common experience be in accordance with his own, and if his own speak the truth in this matter, the fact will be that serous effusion within the pleura always obliterates the attrition sound, and that serous effusion within the pericardium generally leaves it unaltered."* The eventual disappearance of these sounds in all but very rare and exceptionable cases is generally admitted, and we fear that its ordinarily assigned cause must be admitted also. It is but now and then that a trustworthy voice or example almost beguiles us into the hope that the threatened mischief may at times be averted, and the heart restored to its previously sound state; in the vast majority of well-established cases of pericarditis the sufferers escape only with a deceptive and very imperfect cure. In respect of tone the murmurs of pericarditis are described as more or less of a rough character, sometimes like the rasping of wood, or the grating of a nutmeg, or sometimes like the rustling of silk or even the crackling of parchment, or occasionally the sound is softer, approaching to ordinary bellows murmur; and very rarely it resembles the creaking of a new shoe sole. The pericardial murmurs have the resemblance as well as the reality of originating nearer to the ear than the endocardial, and it is a farther help to know that though they may obscure, they do not destroy the natural valvular sounds of the heart, which at certain points, as two inches up the aorta and pulmonary artery in the case of the sigmoid valves, or a little above the apex in that of the auricular, may sometimes be heard independently. It is to be remembered, however, that endocardial murmurs generally co-exist with the pericardial; and for a more detailed account of the means of diagnosis we must refer to the preceding article. The impulse of the heart is increased sometimes greatly in the course of pericarditis, as long as there is little or no serous effusion, but when considerable effusion has taken place, the impulse is feeble, faltering, irregular, and unequal; while at the same time the dulness on percussion over the region of the heart is augmented in intensity, and spreads over a more extended space in proportion to the quantity of fluid poured out, marking out the form which the pyriform shape of the pericardium gives it; and so spreading more upwards and widening more near the apex than in cases of dilatation and hypertrophy of the heart.

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* B. and F. Medical Review, xxiv. p. 557.

† Medical Gazette, xi. 1850, p. 1050.

The prognosis of pericarditis (as far as the escape from speedy death is concerned) may be considered as generally favourable, but variously so under varying circumstances. Thus, as we have already stated, uncomplicated rheumatic pericarditis is far less dangerous than the other forms; while of all kinds, taken indiscriminately, not more than one in six cases is wont to prove fatal, even when the disease has been left entirely to itself, untreated and uncared for. Probably it is considerably more dangerous to life, even when of the rheumatic variety, where it is conjoined with chorea, since of thirty-three such cases collected by Dr. Kirkes, eleven, or one in three, proved fatal; while in its obscure combinations with spasmodic diseases generally, the mortality is far greater — ten out of the fourteen cases cited by Dr. Burrows having terminated in death.

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* Lectures, p. 131.

Excluding all cases combined with spasmodic or maniacal symptoms, and yet taking account of the greater mildness of the rheumatic as compared with other forms of the complaint, our prognosis will be unfavourable in proportion to the embarrassment of respiration and of circulation. Thus difficulty of breathing amounting to orthopnœa, inducing more or less lividity of surface, and accompanied by a feeble and faltering pulse and tendency to syncope, mark a state of things almost or altogether to be despaired of: while the reverse of all this, a natural position of the patient, and not greatly disturbed pulse, with a calm and unanxious countenance, justify confidence as far as the immediate recovery of the patient is concerned.

The post-mortem appearances discovered in cases fatal in the acute stage, consist of those which are indicative of recent inflammation of the membrane. In a case apparently very rapidly fatal, we are told that the pericardium externally was quite dry and was transparent like oiled silk, and that similar appearances have been repeatedly met with.* More commonly, however, there is effusion within the sac of the pericardium, either of serum more or less intermingled with fibrinous shreds, or of coagulable lymph itself, in a more fluid or firmer state. We read also of the effusion sometimes partaking of a purulent character; and of streaks of blood as at times intermixed with the layers of fibrine. Where such formation of pus has taken place, the termination of the case by adhesion of the pericardium will either be prevented or greatly delayed, and the condition of the patient continue more pitiable than under ordinary circumstances. The presence of blood in the cavity of the pericardium, according to the explanation given by Professor Paget, of what used to be considered as hæmorrhagic inflammations, we take to result from the rupture of vessels in the recently formed and tender false membrane. Like other serous membranes, the pericardium is wont to suffer throughout a large portion of its extent, in severe examples of the disease, the opposed free surfaces of the membrane being always simultaneously implicated, but the posterior and inferior portions being more prone to escape than those which are situated anteriorly over the convexity of the heart. The aspect of the surface of the membranes covered with lymph and forcibly separated, have been illustrated by various comparisons. Thus, by some it has been said to resemble the appearance of butter, of which a layer has been compressed between two boards so as to adhere to them, and has then been drawn asunder by their separation; some have spoken of a more or less honeycomb form, while Dr. Watson likens it to the villous surface of tripe. Together with these results of exocardial inflammation there are generally distinct indications of the same process having gone on within the heart, in the form of fibrinous deposits on or near one or more of the valves. And there may be signs of pleurisy or pneumonia, or of degeneration of the kidneys, according to the causes from which the pericarditis has originated, or the complications which have co-existed with it. One general negative fact, however, is worthy of notice, namely, that in those anomalous cases of cardiac disease in which the proper symptoms have been latent, while those of various cerebral or spinal affections have presented themselves, the great nervous centres and their envelopes have rarely or never been found the seats of any appreciable morbid changes.

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* B. and F. Medical Review, xxiv. p. 560.

If the traces of long by-gone pericardial inflammation are to be noted, these are to be found sometimes as mere milk-spots of various thickness, of exceedingly irregular form and distribution, seen more on the anterior than at the posterior surface of the heart, and most of all along the course of the coronary vessels, which are spotted, striped, or dotted with them, the records of an antecedent partial, and probably very trifling, affection.

The more or less universally adherent pericardium, unchanged, or itself the seat of various alterations, such as thickening, or cartilaginous or calcareous or bony deposits, may, in other cases, be found in the victims of the sequelæ of this intractable disease *; while the heart, constrained and fretted by its unnatural bonds, has become partially hypertrophous and dilated, or generally atrophied. †

We have already spoken of pericarditis as a secondary or associated disease in accordance with Dr. Taylor's conclusion, that, in all the cases which he had referred to, there were observed but two generic causes producing it, viz., first, some disease of the blood, as more especially rheumatism, or some renal disease, but especially Bright's disease; and secondly, extension of inflammation from a neighbouring organ to the pericardium, as in pleurisy. And again, he writes that nearly all the cases of pericarditis which he had witnessed were developed, independently of any external or exciting cause, in the ordinary sense of the term. In cases of renal disease, the cause of the cardiac inflammation must have been slowly produced by interference with the due depuration of the blood. In

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* Hasse's Pathological Anatomy, by Swayne.

† B. and F. Medical Review, xxiv. p. 560.

other cases, the application of cold was sometimes the immediate cause of rheumatism, but the pericarditis was almost always induced secondarily through the rheumatism, and not directly by the application of cold.* The testimony of most writers, he states, agrees with his own, in tending to show that metastasis is not the *ordinary* cause of the development of pericarditis in the course of rheumatism.† If, again, pericarditis appears in the course of common continued, or of any of the exanthematous, fevers, it is probably again as a consequence of vitiated blood, and scarcely to be traced with certainty to any external cause. It is easy to assume the direct operation of cold as the efficient agent in such cases, but it is rarely possible to substantiate the assumption.

In the treatment of pericarditis, two objects are to be kept in view, namely, the immediate preservation of life, and the prevention of those disastrous consequences which are wont to arise as the reliquiæ of the imperfectly cured disease. What has already been said on the subject of prognosis will show that, in a vast majority of cases, especially of rheumatic pericarditis, no special treatment need be undertaken with a view to the attainment of the first of these objects, since there is no occasion to busy ourselves about the preservation of life when it is not brought into any jeopardy. But in other examples the peril is far greater, as in the more complicated attacks which arise in connection with rheumatism, in many of those which occur in the course of diseases of the kidney, and yet more in those anomalous ones of undetermined origin which are marked by the great disturbance of the functions of the nervous system. It is the remark of Dr. Burrows upon the treatment of his collection of these last cases, that, in most of them, in conjunction with the abstraction of blood, other remedies, usually termed antiphlogistic, were employed. In a few, in addition to abstraction of blood, opium appears to have been freely given; while in some of those where the pericarditis was detected during life, in addition to the abstraction of blood, generally and locally, calomel and opium were administered freely; and mercurial inunction was likewise employed in a few; and of these various modes the last was the only successful plan. It is to be observed, however, of these three cases of recovery, for in the fourth all the evidence is against there having been any pericarditis at all, that they all occurred in patients suffering at the same time from rheumatism, and therefore were probably of a milder character than many of the others, while one of the patients, independently of any unknown mischief to the heart, survived, in a state of dementia, so that her friends had much cause to grieve over this most unhappy cure. No data are supplied by which a judgment can be formed of the amount of blood abstracted from her, but as she had undergone one venesection and cupping, and repeated leechings, besides the disturbance of the bowels by colchicum and an exhausting purgation from mercury, doubts may fairly be entertained whether her treatment should not be regarded rather as a warning against excess in the use of blood-letting and other depletives, than as an index whereby to guide our practice. We will not go so far as absolutely to exclude venesection from the arm in all cases of pericarditis, but we have scarcely ever had occasion to let blood in cases of rheumatic fever, and are decided in thinking such a measure to be useless (if not positively injurious) as a preventive of cardiac disease. Neither after the attack has manifestly taken place do we consider it any advantage, or, indeed, under all circumstances, even safe, to induce any degree of syncope or shock to the system; the circumstance in which, as we conceive, general blood-letting has the chief advantage over local. To this, as in other cases of inflammation, the plethoric aspect of the patient, more than any other circumstance, would determine our resort to it. We would certainly never open a vein in the pallid and anæmic or debilitated, whatever the vehemence of the symptoms which might suggest such a measure, and we believe that the records of past practice will justify our abstinence. We resort with much greater confidence to leeches, not to be applied by twenties or thirties at a time, but to be placed, some dozen of them, over the region of the heart, to be followed by a poultice, and, if need be, at the interval of twelve or twenty-four hours or more, to be repeated. In reapplying even this, as it may to some appear, moderate quantity of leeches, we should rather act upon the principle, that what we perceived to have been of service to our patient in a moderate, or even slight degree, was likely to prove beneficial on a repetition, than on that practical rule of the disciples of Sangrado, that his becoming worse after blood-letting was an argument for persistence in the same plan. Time, too, is, in our creed, a necessary element or condition of the relief of inflammation, which is rarely or never to be subdued by a *coup-de-main*, while depletion is not always a necessary condition at all, though, in the majority of cases, an instrument for good up to a certain point, beyond which it becomes destructive. "There is, I think," writes Dr. Watson (we cannot here give his argument) "a danger in bleeding to such an extent in these cases as to bring the heart's action to a pause in deliquium. Bleed, therefore (if you deem it requisite to bleed at all), till some effect upon the pulse has been accomplished, and then stop; and renew the venesection, or refrain from it, according to circumstances. But you may freely cup the præcordial region, or cover it with leeches; and to this mode of abstracting blood from the neighbourhood of the inflamed part my own experience would assign the preference. In fact, I seldom open a vein in such cases."*

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* Medico-Chirurgical Transactions, xxviii. p. 566.
† Ibid. p. 518.

With all unwillingness to differ from the high authority just quoted, we cannot but express our conviction that his words would appear to sanction a larger amount of local depletion than we think necessary or desirable; while to us he appears to neglect too absolutely those saline and antimonial medicines which are found to exert no insignificant influence on the circulation in the capillary vessels, the seat of inflammation, and which subject him to none of the evils of such persistent prostration as may prevent recovery or retard convalescence, or occasion ailments scarcely preferable to those from which he has escaped. For these reasons, with moderate local depletion we would combine the use of the common saline draught with small doses of tartarized antimony, as from a sixteenth to an eighth of a grain; and a few drops, as four or five, of tincture of colchicum, which should be taken every four hours, together with a pill, containing two grains of calomel and a quarter to half a grain of opium, and we would continue to act upon this plan till we had obtained a decided mercurial effect upon the mouth, which effect we would maintain for a time by a more sparing use of the mineral. Where leeching had been carried so far as as to produce any signs of pallor or acceleration of pulse, and yet local pain and great dyspnœa remained, especially if the physical signs showed the pericardium to be distended, an ample blister might with advantage be applied over the region of the heart; and the raw surface, if need be, dressed with mercurial ointment; or mercurial inunction be practised in other parts, when it seemed desirable to hasten the action of the mineral. The bowels should be watched, and by means of castor oil or of rhubarb and magnesia, such frequency of action should be secured as to prevent that malaise which costiveness or insufficient action excites in those otherwise healthy, as to prevent, therefore, these sources of sympathetic irritation in such as labour under disease. In addition to these remedial measures, care should be taken that the patient remain at perfect rest, and that every source of annoyance should be excluded which can disturb the body or fret the mind. The temperature of his room may be regulated in accordance with his feelings, being cool rather than too hot, but so as not to risk his catching cold. His diet should be farinaceous, and rather sparing, but not quite reduced to the starvation point, while drinks, especially of lemonade, may be supplied to quench his thirst. Convalescence must be carefully watched, and we need not say how *anxiously* by the medical man who is familiar with the frequent imperfection of the cure; which may render abstinence from all exciting liquors, all harassing emotions and all active exertion, a discipline necessary to be imposed for the remainder of life. Too long persistence, however, in an antiphlogistic plan of treatment is not desirable; and if, after a sufficient mercurial action has been produced and has subsided, there be reason to apprehend that pus remains in the pericardium, or if it be apparent that valvular disease has been produced, and probable that the pericarditis has terminated not in resolution but in adhesion, it will then be better to amend our patient's strength and health by tonics, as bark and quinine, calumba, gentian or quassia, by a moderate diet of animal food, and by sea air, where accessible, than to direct any farther treatment against the local mischief itself.

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* Lectures, 1848, ii. p. 300.

Where pericarditis attacks in so mild a form as to threaten no present peril to life, though an uncertain amount of future mischief to the heart itself, our plan of treatment would be the same as that just indicated, somewhat less energetically, and more deliberately, but not less sedulously carried out. Here, too, we would try the efficacy of a regular mercurial course (even while distrusting it), on the ground so often adduced, anceps remedium melius quam nullum. Here, too, we would check constitutional and cardiac irritability by Dover's powder, opium, morphia, and not neglect the use of mild antimonials and salines.

GASTRITIS, OR INFLAMMATION OF THE STOMACH.

By the term gastritis is understood an inflammation of the stomach, in which its lining or mucous membrane is primarily and principally effected, although other tissues may be more or less involved at the same time. There are two varieties of this disease, the acute and chronic: the former of which, according to most modern authors, is never met with except as a consequence of the action of some poisonous substance; the latter is believed by many to be of frequent occurrence, constituting an inflammatory form of dyspepsia.

Acute gastritis is produced by acrid substances of various kinds, such as arsenic, bichloride of mercury, the oxalic and mineral acids, &c., taken into the stomach, as likewise by food of an improper nature, by potations of spirituous liquors, by large draughts of any cold liquor when the body is much heated by exercise, dancing, &c.; by external violence from wounds, blows, &c.; and by repelled exanthemata and gout.

Acute gastritis is readily to be distinguished by the burning pain, heat, and tension in the region of the stomach; by the aggravation of that pain when any thing is swallowed, with the immediate rejection of it; and by the sudden and greater depression of strength in this than in any other inflammation. Indeed, enteritis is the only disease it can be confounded with; and from this it may easily be discerned by the seat of pain on pressure with the hand. Gastritis is a rare disorder, unless when arising from poisons.

The symptoms which attend it are, a violent burning pain and some external heat in the region of the stomach, with great soreness, distension, and flatulency, a severe vomiting, especially after anything is swallowed, whether it be liquid or solid, most distressing thirst, restlessness, anxiety, with great debility, constant watching, and a quick and contracted pulse. In some cases a severe purging attends.

If the disease increases in violence, symptoms of depression increase; there is great loss of strength, with faintness, a short and interrupted respiration, cold clammy sweats, hiccups, coldness of the extremities, an intermitting pulse, and the patient is soon cut off.

The event of gastritis is always doubtful, the person may be suddenly destroyed by the violence of the inflammation, or more gradually exhausted by the constitutional disturbance attending it. Recovery does, however, sometimes follow severe attacks.

If the symptoms are very mild, and proper medicines have been employed at an early period of the disease, it may terminate in resolution, and that in the course of the first, or, at farthest, the second week. The pulse becoming more soft and full about the fourth day, and diminishing in frequency, and the pain gradually ceasing, are to be regarded as favourable symptoms.

The appearances discovered after death must vary according to the kind and quantity and state of concentration of the particular poison which has produced the disease. The strong mineral acids, as the sulphuric, often produce charring of the mucous membrane, and extravasation of blood on its free surface, and into the submucous areolar tissue, constituting the appearance known as black warty extravasation; and besides this there may be more or less of deep inflammatory redness. With arsenic the blackness is seldom so great, but vivid redness exists in the mucous membrane, with an increased secretion of a viscid mucus. With other strong poisons, as corrosive sublimate, or oxalic acid, there is often mottled redness; the former poison sometimes being incorporated with the tissue and producing a grey coloration in parts, the latter causing it may be softening or brittleness of the surface, and like all the acids producing a blackening of the blood, whether effused or in its vessels.

We know not how to give a better account by which acute inflammatory redness may be recognised, and distinguished from that arising from other causes, than in the words of Dr. Christison, as published at page 137 of his Treatise on Poisons. "According to his (M. Billard's) researches," says this author, "redness is to be accounted inflammatory only when it occurs in parts, not depending in position, or is not limited to such parts: when the mesenteric veins supplying to the parts are not distended, nor the great abdominal veins obstructed at the time of death; when the reddened membrane is covered with much mucus, particularly if thick, tenacious, and adhering; when the mucous membrane itself is opaque, so than when dissected off and stretched over the finger, the finger is not visible; when the cellular tissue which connects that membrane with the subjacent coat is brittle, so that the former is easily scratched off by the nail." The diffused blush which accompanies digestion, and the redness arising after exposure of the surface to the air, must be guarded against as sources of fallacy, as well as the staining from highly coloured substances, such as the juice or syrup of the red poppy, of which M. Orfila cites an example.

Where vomiting does not arise spontaneously it must be produced, and if an antidote to the poison be known it should be freely administered. When we have a perfect antidote, as in the case of the acids and alkalies, its exhibition should precede other measures, if it be at hand, for here the emptying of the stomach is of little importance. As an emetic, sulphate of zinc may be given, in a dose of half a drachm, and its action assisted by tickling the fauces with a feather, an expedient which may be resorted to while the emetic is procured, and which will sometimes have the effect of inducing vomiting. The use of the stomach-pump we consider inadmissible in cases where there is likely to be much injury to the fauces and gullet, as where the strong acids or alkalies have been swallowed. In these cases it is unnecessary, since they may be perfectly neutralised. Neither when other irritants have been swallowed do we conceive it to be more efficacious in removing them, than the act of vomiting itself, while its use is accompanied with some trouble and possible hurt to parts which are suffering already. Copious draughts of bland fluids, as carbonate of magnesia, suspended in water or milk, should be taken at the commencement if no specific antidote is known, since this is soothing to the irritated mucous membranes, and may, besides, assist in enveloping the poison and causing its ejection, or protecting the alimentary canal from such portions as remain. Milk, too, and white of egg diffused in water, may be used with the same object. After the ejection and neutralisation of the poison have been as far as possible effected, we have to contend against the mischiefs which its first action may have excited, and as these are of an inflammatory character they must be combated by the means suited to subdue inflammation. The repeated application of leeches appears the best calculated for this object, and far preferable to general blood letting, since these tend to relieve the local affection with less shock to the constitution at large, which, in dangerous cases, is already too much depressed. Blisters are only useful in a chronic stage of the malady; when this has arrived they may be used with advantage, if necessary: warm fomentations or poultices may follow the application of the leeches so as to encourage the hæmorrhage, and they serve also to mitigate pain. With the same view of soothing pain, of calming constitutional irritation, and procuring rest, small doses of laudanum, as five minims, may be given three or four times a day, in a table spoonful of barley water, or of magnesia and water, or of other bland vehicle. The use of aperients should be long delayed where the bowels have failed to act, and the mildest only should be tried even after several days, or a simple laxative enema be first resorted to. Milk and farinaceous articles, as arrow root, or sago, or crumb of bread, should be the only diet allowed at first, and care must be taken that the stomach be not distended with too large a quantity at once. By degrees animal broths or an egg, may be allowed; but the diet must, for a considerable period, be subjected to careful regulation.

The appropriate antidotes will be described under the heads of the several poisons.

Chronic gastritis will be spoken of under the head of Dyspepsia, as forming a variety of that disease.

ENTERITIS, OR INFLAMMATION OF THE INTESTINES.

The enteritis here to be described is that which was distinguished as phlegmonous by Dr. Cullen, an epithet little in use among more modern writers. It is not, however, the disease which is spoken of by Dr. Symonds in the fourth volume of the Library of Medicine, as identical with the dothin-enterite of M. Bretonneau, and the exantheme interne of Andral and others. Nor again do we include under this head all inflammations of the intestines, as Dr. W. Stokes seems to have done in his article bearing this title in the Cyclopædia of Practical Medicine. The enteritis of which we speak does not comprehend the ileo-colitis of the former author, nor dysentery and diarrhœa, as does that of the latter, but is that which is thus described by Dr. Abercrombie: "Enteritis differs from simple peritonitis, chiefly in the presence of vomiting and obstinate obstruction of the bowels. The pulse, also, is in general more permanently frequent, and the pain more violent and constant, often resembling the tormina of ileus. This, however, is not invariably the case; enteritis, on the contrary, being sometimes characterised chiefly by fever, with urgent vomiting and obstruction, with tenderness of the abdomen, but without much complaint of pain. The pulse in enteritis is generally small and rapid, but not uniformly so, for we may find the disease with a full pulse and little increased in frequency. The disease, we have reason to believe, consists in inflammation affecting the peritoneal and muscular coats at once; and it is probable that it may supervene either upon ileus or peritonitis, or may take place at first in its complete form. There is cause to presume that it may likewise supervene upon inflammation, beginning in the mucous membrane. There is often inflammation of the whole substance of the bowel at the inflamed part.

The only disease with which enteritis can be confounded is colic; but from this it may readily be distinguished, as the former is accompanied with fever, and a quick and hard small pulse, and the pain is increased on pressure, which does not occur in colic.

In enteritis, as well as in peritonitis, the patient is wont to lie upon his back with his knees drawn up, so as to relieve the pressure of the abdominal muscles. The trunk of the body is kept at rest, even when the violence of pain may cause the arms to be thrown about, and the breathing is thoracic. The pains of enteritis, though marked by exacerbations and remissions, do not completely intermit as they usually do in colic.

The causes of enteritis are much the same with those of gastritis, being occasioned by acrid or irritating substances, indurated fæces, acrid bile, long-continued and obstinate costiveness, spasmodic colic, intus-susceptio, and a strangulation of any part of the intestinal tube; but another very general cause is atmospherical vicissitude, or the application of cold to some part of the skin during or subsequent to a state of perspiration. It is also occasioned by cold drink of any kind taken when the body is heated, in the same way as inflammation of the stomach is apt to arise therefrom. We should always be careful to ascertain whether the symptoms may not arise from an external strangulated hernia.

Enteritis comes on with an acute pain, extending in general over the whole of the abdomen, but more especially round the navel, which is greatly aggravated on pressure; accompanied with eructations, sickness at the stomach, a vomiting of bilious matter, obstinate costiveness, thirst, heat, great anxiety, and a quick and hard small pulse. After a short time the pain becomes more severe, the bowels are affected with slight spasms, the whole region of the abdomen is highly painful to the touch, and seems drawn together in lumpy contractions; invincible costiveness prevails, and the urine is voided with great difficulty and pain.

Enteritis is always attended with considerable danger, as it often terminates in gangrene in the space of a few hours from its commencement: this event is marked by a sudden remission of pain, sinking and irregularity of the pulse, sinking of the features, cold sweats, syncope, suppression of urine, hiccup, and distension of the belly, which sounds on being struck with the finger; and it frequently proves fatal, likewise, during the inflammatory stage. If the pains abate gradually, if natural stools be passed, if a universal diaphoresis, attended with a firm equal pulse, comes on, or if a copious discharge of loaded urine, with the same kind of pulse, takes place, a resolution and favourable termination may be expected.

Dissections of this disease show that the inflammation pervades the intestinal tube to a very considerable extent; that adhesions of the diseased portion to contiguous parts are often formed; and that, in some cases, the intestines are very livid, and even in a gangrenous state. They likewise show, that besides obstinate obstructions, intus-susceptio, constrictions, and twistings, are often to be met with; and that in most cases the peritoneum is more or less affected, and is perceived at times to be covered with a layer of coagulable lymph. The mesentery and omentum are also found much inflamed. Extreme distention occurs in some, and emptiness and contraction in other parts of the canal.

The cure of enteritis must be directed to remove the obstruction from the intestines, and to subdue the inflammation.

On the first coming on of the disease, it will be necessary to have recourse to bleeding, which may be repeated according to the severity and violence of the symptoms, and the age and strength of the patient. Blood should be drawn from the arm in a full stream, by means of a sufficient orifice, as quickly after the pain is felt in the bowels as possible, regardless of the *apparent* debility in the pulse and patient; and it is, perhaps, of more importance in this than in any other inflammation, that the great object of venesection should be obtained by the first bleeding; for if the inflammation is not quickly subdued, mortification rapidly advances. If the object in view should not be obtained by one copious bleeding (say to the extent of twenty ounces, if the patient is an adult), the operation must be repeated within six or eight hours again, and to such an extent as the circumstances of the case require, and the action of the heart will bear.

After venesection, topical bleeding, by means of several leeches applied to the abdomen, may be advisable in some cases. These steps being taken, the application of a large blister to the abdomen, or upper part of each thigh (see Peritonitis), will be proper. In bowel complaints of the West Indies, it is often found that the most powerful purgatives will produce no effect until a blister be applied, and that as soon as it begins to rise, they then commence to operate.

To assist in relieving the pain and gripes, we may recommend warm fomentations to be applied to the abdomen, and emollient clysters, blended with aperients [*], to be frequently injected. A clyster composed of a solution of soap, by dissolving any lumps of feculent matter, will sometimes procure stools when an enema of another nature fails. With the same view, copious injections of warm water alone may be used with advantage. In this way several pints may be employed, the quantity being increased as long as this can be done without much force on the part of the operator or distress to the patient. Where hardened fæces are collected near the termination of the rectum, they should be removed by a scoop or spoon; and we have heard of one case in which an elastic tube was passed through such a mass somewhat higher up whereby distention was relieved, and the patient rescued from impending death.

All powerful purgatives are to be avoided during the existence of much tenderness or active inflammation, but we think that we have in calomel an agent suited to the exigencies of the case. This is generally borne well by the stomach; and, as is shown by its use in dysentery acts mildly on the mucous membrane in free doses. We prefer giving it in powder, to the extent of five grains, night and morning, mixed only with a little sugar. Opium, too, is of much service, and Dover's powder the best form for its exhibition. We should not hesitate to try this in doses of five grains, with two drachms of liquor ammoniæ acetatis, in mint water or any pleasant vehicle, notwithstanding the occurrence of vomiting. We recommend this form of medicine from a confidence in its power to produce a healthy diaphoresis, and give relief in cases of peritoneal inflammation, and from a belief that the ipecacuan contained in it has no tendency to increase vomiting excited by mechanical obstruction, but may even abate this symptom, if it contribute, in common with the other means, to diminish the intestinal inflammation which generally precedes and accompanies, and no doubt conduces to, the inverted action of the stomach. What we wish to note is, that the primary mischief to the intestine, not the secondary symptoms due to the stomach, is to engage our attention. Such a draught as we have just spoken of may be given every four hours; or calomel and opium may be exhibited together in the form of a pill, containing two grains of the former with half a grain of the latter, to be taken with the same frequency. If the disease be a pure primary enteritis, that is, an inflammation of some part of the intestinal tube, involving all its tissues, and so paralysing the action of its muscular coat, independently of any strangulation or obstruction of the intestine itself, we may, by these means, hope to effect a cure. The inflammation being removed by such treatment as we have indicated, the action of the bowels will return spontaneously, or only need the mildest laxative, as a little castor oil or a compound rhubarb pill, to recall it.

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[*] ℞ Infus. Sennæ Comp. f ℥xj.
Sodæ Sulphatis, ℥j.
Ol. Ricini, f. ℥ss. M.
Ft. Enema.

[*] Take Compound Infusion of Senna, eleven ounces.
Sulphate of Soda, one ounce.
Castor Oil, half an ounce.
Mix them for a clyster.

If there be a permanent cause of the enteritis, as the obstruction of the intestines by impacted fæces; here, too, the inflammation must first be subdued in the same manner as before, prior to any attempt to force a passage by means of purgatives; and these, when resorted to, must be such as are as little irritating as possible, lest they bring back the inflammatory state. If, when the vomiting has ceased, and tenderness of the abdomen is much reduced, there is still no passage through the bowels, even when castor oil has been resorted to, in addition to the enemata already spoken of, we may try some such formulæ * as those given below; the pill and the draught being taken together, the effect of the latter, as

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* ℞ Pulv. Scammon. gr. iij.
Hydrarg. Chlorid. gr. j.
Mistur. Acac. q. s.
Misce fiat pil. quartâ quâque horâ sumend.

Vel,
℞ Mistur. Cretæ, ℥iss.
Magnes. Sulph. ʒj.
Solve fiat haust. quartâ quâque horâ sumend.

* Take Powdered Scammon. three grains.
Calomel, one grain.
Mucilage, enough.
Make a pill to be taken every four hours.

Or,
℞ Take Chalk mixture, an ounce and a half.
Sulphate of Magnesia, a drachm.
Dissolve and make a draught to be taken every four hours.

we know by much experience, being to soothe the mucous membrane while it aids the aperient action of the pill. In the case here supposed, treatment will often fail; since the inflammation will not yield readily in the presence of a persistent exciting cause. Yet the case here supposed is not so desperate as that in which there is some internal strangulation, which it is beyond all power of art to remove.

These different causes of the enteritic disease can seldom be distinguished with accuracy at the outset of that complaint; the treatment we have pointed out is suited to the only remediable varieties, while it abstains from aggravating, and may even somewhat appease, the sufferings of the patient, where his case is hopeless from the beginning. We know not how far it may be possible to remove the obstruction when it depends upon intus-susception of a portion of intestine, but, in that case, we think the plan proposed offers the best prospect of success. In one case of obstructed intestine an attempt was made, by opening the abdomen, to discover its seat and free the strangulated portion, but this, at all times almost a desperate resource, would be quite unjustifiable after symptoms of enteritis had once set in.

In enteritis, as well as peritonitis, the warm bath is often made use of; but by some practitioners its effects have been considered as somewhat doubtful, if not hurtful, until the inflammatory action is checked by general and local bleedings. Cloths wetted in cold vinegar and water, applied over the whole surface of the abdomen at short intervals, have been attended, in some cases of peritoneal inflammation, with the best effects, after fomentations with warm water and warm bathing have failed. The safety and propriety of such a practice has, however, been questioned by some physicians of eminence.

Whatever is given to the patient as aliment should be of the most mild diluent nature, such as barley-water, beef-tea, and chicken-broth; and these ought to be taken sparingly, and only in a small quantity at a time, until some evacuation has been procured; as much food forced against the obstruction must necessarily increase the irritation, and of course aggravate all the symptoms. The strictest adherence to an antiphlogistic regimen must be enjoined.

When the disease is combined with spasmodic colic, the means recommended under that head must be pursued.

In severe obstructions of the intestinal tube, accompanied by obstinate constipation, and where purgatives fail in procuring motions, it has been a common practice to have recourse to quicksilver in considerable quantity, and no doubt it will find its way through the intestinal tube in most instances merely by its gravity; but in cases of enteritis, where there is intus-susceptio, or it is combined with hernia of any species, this remedy cannot fail to prove highly injurious.

As enteritis is very apt to recur from slight causes, the greatest circumspection will be requisite after recovery. Improper food and exposure to cold are therefore cautiously to be avoided, and costiveness to be immediately removed.

HEPATITIS, OR INFLAMMATION OF THE LIVER.

PYREXIA, tension, and pain of the right hypochondrium, often pungent, as in pleuritis, but sometimes dull, pain in the clavicle and top of the right shoulder, uneasy lying on the left side, impeded respiration, dry cough and vomiting, are the characteristics of hepatitis: very frequently there is some degree of jaundice.

Hepatitis has generally been considered of two kinds; the one acute, the other chronic; the former showing the essential character of genuine inflammation, occupying either the substance of the liver, or its capsular lining, or perhaps both; the latter exhibiting symptoms of less violence as to their inflammatory tendency, but an enlargement and hardness of the liver, with an obtuse pain.

Besides the causes producing other inflammations, such as the application of cold, external injuries from contusions, blows, &c., this disease may be occasioned by violent exercise, by intense summer heats, by long-continued intermittent and remittent fevers, by high living, and an intemperate use of vinous and spirituous liquors, but more particularly the latter, and by various solid concretions in the substance of the liver. In five cases out of six, the exciting cause of acute hepatitis will be found to be the partial application of cold or wet when the body is heated or over-fatigued by violent exercise. Derangement of the digestive organs, suppressed secretions, inflammations, compression, fevers, and mental solicitude, are very general causes of obstructions and diseases of the liver.

Dr. G. Budd, in the Gulstonian Lectures for the year 1843, published in the thirty-third volume of the "Medical Gazette," in speaking of the causes of suppurative inflammation of the liver, assigns a very extensive agency to a vitiated condition of the blood, as arising in some cases from an admixture of pus generated in some vein which has been the seat of phlebitis, and in other instances from pus or sanies, or some morbid matter admitted into the venous branches which contribute to the formation of the vena portæ. That inflammation of veins, the result of blows, or other accident, or arising as a consequence of surgical operations, may be followed by collections of pus in other parts, as the lungs, liver, or elsewhere, is a position now generally admitted. Dr. Budd argues, and, we think, convincingly, that the abscesses thus arising are not mere depositions of pus brought from a distance and left in the particular parts in which they may subsequently be found; since, if this were so, blood corpuscles, which are much smaller than those of pus, would simultaneously escape from the conveying vessels, and be found intermixed with the contents of these cavities. His view is, that particles of pus generated in the inflamed vein are indeed conveyed to the parts in which the abscesses occur, but that it is their arrest in some one or other of the minute capillaries through which they have to pass in the course of the circulation which gives rise to surrounding inflammation, terminating in suppuration, the particles conveyed thus causing the formation of the abscess, but not constituting the bulk of its contents. He compares the influence of the purulent globules thus mixed in the blood to that of small globules of mercury, which are found to constitute the centres or nuclei of purulent formations, when that metal has been injected into the veins. If this be so, phlebitis, wherever occurring, is to be reckoned among the causes of suppurative inflammation in the liver or other organs in which such abscesses may arise. Analogous to this process he conceives to be the formation of hepatic abscess in connexion with dysentery, or with certain forms of ulceration occurring in some portion of the extensive surface whose blood is returned through veins contributing to the formation of the vena portæ; whether it be in the stomach, in the intestinal tube, or in the gall bladder or its ducts. The frequent association of dysentery and hepatic abscess is a fact admitting of no doubt, remarked upon, as it has been, by many authors, supported by the particular cases (amounting to fifty-nine) which Dr. Budd has collected, and farther enforced by the experience of Dr. Geddes. The first of these authors tells us that of the twenty-nine cases of hepatic abscess of Mr. Annesley, which he had tabulated, twenty-one exhibited ulcers, more or less extensive, in the large intestine; while in two others the intestine was strictured, in consequence, no doubt, of dysentery at some former period. In ten out of thirteen cases of his own, there were ulcers in the intestine, stomach, or gall duct. Of fifteen cases taken from Andral and Louis, in six there were ulcers in some part of the extensive mucous surface which returns its blood to the portal vein; while of five others of these fifteen, in one a blow, and in four phlebitis, were the sources of the abscess. Thus, after excluding two cases in which the intestines were not examined, and five in which other causes of abscess were met with, we have thirty-nine out of fifty-two instances adduced by Dr. Budd, in which abscess of the liver was associated with ulceration of the mucous membrane of the apparatus of digestion; which ulceration, in the majority of instances, was, no doubt, the evidence of co-existing dysentery.

"The large intestines," says Dr. Geddes, "appear to sympathise peculiarly with the state of the liver; and few of the cases of abscess of this viscus have been unattended by some degree of affection of the bowels, in some part of their progress. In one class of cases," consisting of thirteen out of twenty-nine, "the patient had been subject for some months or weeks to occasional attacks of dysentery, or had been once severely attacked with this disease, sometimes accompanied with pain about the liver, or abdomen; but as the affection of the former became more prominent in the latter periods of the complaint, the dysenteric disorder became less conspicuous, and the bowel complaint was not a very urgent symptom at the death of the patient. In six other cases, the affection of the bowels did not become prominent till near the death of the patient. In another description of cases," amounting to seven, "the fatal termination has evidently been accelerated, if not immediately produced, by the severity of the dysenteric affection. In the remaining three cases, all of which quickly ran their course, there was little affection of the bowels." In fifteen of the twenty-nine, more or less extensive ulceration of the intestines was found after death, while in nine they are said to have been healthy.

It appears, then, that the observations of Dr. Geddes give additional evidence of the association of dysenteric affection and hepatic abscess, contended for by Dr. Budd. The expression that the large intestines sympathise with the state of the liver, if taken as an explanation of this phenomenon, seems unsupported by any facts: it might have been said, with as great a show of probability, that the liver sympathised with the intestines; while a yet more tenable argument would maintain that sympathy had nothing to do in the matter, seeing that sympathy is inoperative in the production of organic changes, such as either ulceration of the bowels, or suppuration of the liver. A more general explanation of this coincidence of dysentery and hepatic abscess is that which attributes the irritation of the bowels to the acrid qualities of the bile dependent on the hepatic disease; an explanation to which Dr. Budd opposes the fact, that the small intestines are almost always found healthy in these cases, although they must have been subjected to the influence of the irritating bile, at least equally with the cœcum and colon, which are supposed to become diseased from this cause. The dysenteric affection, and the accompanying morbid changes of the large intestines, regarded by others as consequences, are, as we have seen, considered by him causes, of the hepatic disease, and while we are unable to give his arguments more in detail, we cannot omit the important conclusions which they seem to establish.

"Admitting dysentery or ulceration of the bowel to be a source of abscess of the liver, it is obvious that the liver does not become affected by spreading of the inflammation, but by some contamination of the portal blood. This may either be by suppurative inflammation of one of the small intestinal veins, or by the fetid gaseous and liquid contents of the large intestine in dysentery. It is, I think, probable that contamination of the former kind usually gives rise to small disseminated abscesses; of the latter, to diffuse inflammation, and a larger, perhaps single, collection of pus.

"It is not, however, every form of ulceration of the stomach and intestines that gives rise to abscess of the liver. I have never seen abscess of the liver noticed in conjunction with simple ulcer of the stomach, or with ulcerated intestine in typhoid fever; it was not observed in any of Mr. Curling's ten cases of ulceration of the duodenum after burns. It is very rare in conjunction with phthisis. It seems to occur chiefly in conjunction with sloughing ulceration in acute dysentery; and with chronic ulcers, attended with thickening and ulceration of the submucous cellular tissue. In the latter case, the inflammation occurs on some aggravation of the gastric or dysenteric symptoms."

Dr. Budd farther maintains that suppurative inflammation of the liver is not a consequence of inflammation of the duodenum, as stated by Broussais, nor of the abuse of spirits, nor of passive congestion arising from impediment to the circulation in the heart or lungs. He conceives it to be occasionally, but rarely, a direct result of residence in a hot climate, and only consequent upon remittent or intermittent fevers when they are attended by a dysentery.

That dysentery, however, does not necessarily, and in all its forms, give rise to hepatic abscess, appears from the statement of Dr. Baly, that among the many hundred cases of dysentery which occurred in the Millbank Penitentiary during seven years, not one was complicated with hepatic abscesses. On the other hand, Dr. Morehead, writing of the dysentery of Bombay, mentions the association of hepatic abscess in twelve out of thirty fatal cases.

An inflammation of the liver, and the diseases consequent thereon, are indeed affections more frequently to be met with in warm climates than in cold ones, particularly in the East and West Indies, where few Europeans can reside for any length of time without being attacked by them. The liver in warm climates seems to be the seat of disease nearly in the same proportion that the lungs are in Great Britain. Both acute and chronic hepatitis are frequently met with in persons who come to Europe from the East and West Indies; and in those who have been affected when in those climates, they are very apt to recur by the application of causes which would be likely to have a different effect upon any body else.

Between the hepatitis of India and that of Europe there is no small dissimilarity in the symptoms. The flux, which may be termed pathognomic of the former, is always wanting in the latter. That of India partakes more of inflammatory congestion and obstruction; the other of active inflammation. In India or the West Indies a termination in suppuration is principally met with among those lately arrived from Europe, and may, in most cases, be traced to intemperance, violent exercise in the sun, or sudden exposure to cold when the body has been in a state of considerable perspiration. The hepatitis of India is generally allowed to be, in all similar stages, a milder disease than the sporadic hepatitis of this country, the phlogistic symptoms being less violent.*

The acute species of hepatitis comes on with a sense of chilliness, preceding pain in the right hypochondrium, sometimes dull, sometimes sharp, extending up to the clavicle and shoulder of that side, most usually; which is much increased by pressing upon the part, and is accompanied with a cough, oppression of breathing, and difficulty of lying, except on the side affected, together with nausea and sickness, and often with a vomiting of bilious matter; the intestines are generally inactive, and the stools show a deficiency of biliary secretion, or at least of any intermixture of it with them; the urine is of a deep saffron colour, and small in quantity; there is loss of appetite, great thirst, and costiveness, with a strong, hard, and frequent pulse, of from 90 to 100 in a minute, and sometimes intermitting; the skin is hot and dry at the same time, and the tongue covered with a white and sometimes a yellowish fur; and when the disease has continued for some days, the skin and eyes become tinged of a deep yellow, particularly when the inflammation is produced by calculi in the parenchyma of the liver.

In hepatitis, as well as in other diseases, we do not always find the symptoms of the same degree of violence as they are described in the definition: thus, in some cases, the fever is severe, in others it is scarcely perceptible; in some instances the pain is very acute and violent; in others, collections of pus have been found after death, when no pain had been felt. When the pain is seated deep in the substance of the liver, as that possesses little sensibility, the pain is usually obtuse; but when the surface is affected, it is acute, and apt to spread to the diaphragm and lungs, producing cough.

Both ancient and modern nosologists have made a distinction between the symptoms that occur when the inflammation occupies the convex surface of the liver, and those that are present when the disease affects the concave. It is said, when great difficulty of breathing and cough accompany the pain in the region of the liver, that these symptoms indicate the inflammation to be seated in the superior or convex part; but where the inflammation occupies the concave or inferior surface, which lies contiguous to the stomach and duodenum, there is more sickness and vomiting; and, moreover, the pain is not so violent in the region of the organ as in the other instance.

My own observations, during a practice of many years in the West Indies (where hepatitis is a disease of frequent occurrence), as well as in England, do not permit me to say that the symptoms which have just been pointed out are so unequivocal as have been represented by nosologists.

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* See Dr. Saunders's Treatise on the Liver. See Essay on the Influence of Tropical Climates on Europeans, by J. Johnston, M.D.

The chronic species is usually accompanied with a morbid complexion, loss of appetite and flesh, lowness of spirits and despondency of mind, headach or giddiness, general weakness, a morbid sensibility of the nervous system, costiveness, indigestion, flatulency, acidity, and pains in the stomach, a yellow tinge of the skin and eyes, clay-coloured stools, high-coloured urine, depositing a red sediment; an obtuse pain in the region of the liver, extending to the shoulder, together with a sense of weight, unusual fulness, and some enlargement and hardness of the organ, and not unfrequently with a slight difficulty of breathing, or dyspnœa. In some cases of chronic inflammation of the liver, the pulse has been observed to intermit.

The symptoms are, however, often so mild and insignificant as to pass almost unnoticed, as large abscesses have been found in the liver upon dissection, which in the person's lifetime had created little or no inconvenience, and which we may presume to have been occasioned by some previous inflammation. On the other hand we believe that maladies are often referred to the liver upon very insufficient evidence of any derangement of that organ.

Dr. Budd speaks of spasm of the abdominal muscles, more especially of the right rectus, as an occasional symptom of suppurative inflammation of the liver; but he does not consider this as pathognomonic. Neither vomiting nor jaundice is invariably present; Dr. Geddes says that the dysenteric affection keeps off the tendency to vomiting. The pyrexia attending the formation or existence of hepatic abscess, (for it is impossible to mark the exact stages in this disease,) is stated by the latter author to have been generally of the character of hectic fever; in some instances there were paroxysms nearly resembling those of an intermittent or remittent fever, and in several profuse perspirations were observed to take place. Rigors occurred in some cases, but rather as constituting a stage of these paroxysms than as trustworthy indications of the setting in of the suppurative process. In fact neither the time of the commencement of hepatic inflammation nor of its subsequent progress admitted of precise determination.

Hepatitis, like other inflammations, may end in resolution, suppuration, gangrene, or scirrhus, in which the liver becomes swelled and hard; but its termination in gangrene is a rare occurrence. It is frequently accompanied with chronic obstruction. Its tendency to run into suppuration is not so great in this country as in warm climates. In these the inflammation advances with great rapidity, and suppuration takes place in a short time. Indeed it is a rare occurrence here. The period of suppuration is influenced by the degree of inflammation, the season of the year, climate, and the remedies that have been employed. Scirrhus may exist in the liver without previous active inflammation, as in those who have long resided in the East or West Indies. A scirrhosity of the liver most generally arises from this cause, and from an abuse of ardent spirits.

The disease is seldom attended with rapidly fatal consequences.

Hydatids now and then form in or on the liver, and sometimes acquire so considerable a size and hardness, as to be distinguished with great difficulty from chronic hepatitis terminating in suppuration. A case of this nature, which had been of long standing, in a lady of about forty-eight years of age, and the mother of a large family, lately came under my observation. She had some time back consulted a few of the most eminent surgeons in London, as also one of this city, by whose advice she was put under a course of mercurial frictions, with the internal use of the pilula hydrargyri and nitric acid, under the supposition that her disease was induration and enlargement of the liver, which might ultimately terminate in a suppuration. There was wanting, however, that yellow tinge of countenance and derangement in the biliary system, to satisfy me perfectly that a just idea had been formed of the nature of her complaint. Latterly it was obvious that a fluid was contained in the tumour, which had now acquired so considerable a size as to render an operation indispensably necessary. On performing this, it became evident that the disease was really a very large hydatid, as sixteen pints of water were drawn off through the canula, towards the close of the flowing of which a small quantity of lymph came away.

The most favourable signs in hepatitis are, a gradual abatement of the pyrexial symptoms, an improvement in the complexion, the strength having been not much reduced by the remedies, a return of the appetite, and an increase in the bulk of the body. Intensity of pain in the region of the liver, a full and frequent pulse, considerable heat, thirst, dry skin, costiveness, and frequent rigors, denote approaching suppuration. Abscess of the liver may be considered as a dangerous disease under any circumstance.

When the inflammation terminates in the formation of matter, the inflammatory symptoms gradually subside, and give way to those of suppuration. The fever becomes somewhat intermittent, frequent rigors or shiverings are felt, the sense of weight in the part increases, the pains are less acute, but throbbing, the tongue is white, with flushings of the countenance; and when the abscess is formed near the edge of the liver, or towards the concave surface, it not unfrequently projects under the false ribs, so that the fluctuation may be felt externally. If the abscess forms on the convex surface, it points towards the cavity of the thorax, perforates the diaphragm, and makes a passage for the matter through the lung, whence it finds its way into the bronchi, and is thus expectorated without difficulty. Dr. Budd describes the sputa in such cases as consisting of a dirty red or brownish puriform matter, the appearance of which he considers pathognomonic of hepatic abscess thus perforating the lung. Such a channel of escape for the contents of the abscess can only be formed when adhesive inflammation has agglutinated the contiguous surfaces of the liver and diaphragm, and of the diaphragm and lung: in the absence of these adhesions, the matter will be effused either into the cavity of the peritoneum or into that of the pleura; these latter, however, are less frequent, as they are less favourable events than the former. It likewise happens now and then that the sides of the abscess forming adhesions with the stomach, or much oftener with the colon, the matter is discharged into their cavity, and evacuated either by vomiting or stool.

Increased vascularity, in spots of greater or less extent, giving rise to increased redness, and a softer consistence, are to be expected as marking the earlier stages of hepatic inflammation. When suppuration has taken place, we may have the matter collected in one large or in several smaller abscesses; the first would seem by far the more frequent occurrence, at least if we are to judge from the observations of Dr. Geddes. Of twenty-nine cases, of which the details of the dissection are available, he tells us, that in twenty-three the disease consisted of one large abscess, in three of numerous small abscesses, in two of a combination of these, there being many small and one large abscess, and in one case there was one large abscess and another small one. As regards size, abscesses vary extremely, sometimes being no larger than peas, and in other cases having a capacity of several pints. The pus is white or yellowish, and free from odour so long as there is no external communication with the air. In some cases it is contained within a cyst of coagulable lymph having a greyish, granulating surface, or even lined by a false membrane; in others there is no layer of this kind, and the matter appears mixed up with the substance of the liver. Both Dr. Budd and Dr. Geddes consider this absence of a cyst as connected with a more acute form or shorter duration of the disease. If the case be protracted, the walls of the abscess may assume an almost cartilaginous hardness; a circumstance which Dr. Budd considers to constitute an obstacle to the obliteration of its cavity. In rare instances abscesses have been found, to all appearance, in a quiescent state, the remains probably of inflammatory processes which had been in operation years before; while, under yet more favourable circumstances, the presence of a cicatrix in the substance of the liver, with more or less of corrugation or depression on its surface, have indicated the completion of the process of reparation. Abscesses are found in livers of every shade and colour that can be produced by variation in the quantity of the blood, and in that of the bile. In some cases it has been paler and harder than natural, in others it was of a dark chocolate hue; in many instances there was little deviation from its healthy aspect. Except as far as it may be distended by the contents of the abscess, the liver is not generally materially enlarged. Other morbid changes met with after death may depend upon the various ways in which the abscess may have discharged itself.

What constitutes great difficulty in managing hepatitis is, that in many cases the symptoms which are primary and indicative of inflammatory affection are but very slightly marked, even when it is in such a degree as to run with readiness into suppuration, as is the case in the East and West Indies. The pain in the side is not constant or acute, the patient himself takes little notice of it, seldom mentions it unless he is asked about it, and when questioned concerning it, he only tells you, perhaps, that he has felt at times slight pains about the pit of the stomach, or in the right side. It is only by observing the secondary symptoms, such as a diarrhœa, or a short dry cough, and pain felt at the top of the shoulder, or that there is a degree of fulness or tenderness on pressing on the organ a little hard, with some yellowness of the eyes and countenance, that the true state and nature of the disorder is to be ascertained in such cases.

During the inflammatory stage of acute hepatitis it will be proper to adopt general bleeding, proportioning the quantity which is taken away to the constitution, age, and sex of the patient, the severity of the pain, and the degree of fever that is present; and repeating the operation very soon again if the symptoms do not greatly abate and the inflammatory action appear to be subdued. After venesection, we should give a proper dose of hydrargyri submurias with jalap or some other cathartic, repeating it every other day until the inflammatory symptoms subside. Purging, indeed, appears to be a means of relief well calculated for diseases of the liver. These steps being taken, we may recommend the application of several leeches over the region of the liver, or we may draw off a sufficient quantity of blood by applying the scarificator and cupping-glasses.

Some practitioners disapprove of bleeding from the system in this disorder, and recommend in its stead to draw blood from the neighbourhood of the part, which may be the preferable way in those cases which are unattended with much pain or pyrexia, or where the disease has followed a severe intermittent or remittent fever, and consequently the patient is in a cachectic state: but in those where the pain is acute, the pulse full and strong, and the febrile heat and thirst are considerable, copious and repeated venesection at an early period of the disease will be necessary. It will, however, be better to take away at once a quantity suited to the age and temperament of the patient, and the degree and extent of the disease, than to employ repeated small bleedings. It will be proper also in bleeding to make a large orifice, as physicians have been struck at all times with the effect produced by taking the blood from a large orifice in inflammatory diseases.

If the symptoms do not abate, in consequence of bleeding from the arm and the topical abstraction of blood, a large blister applied over the region of the liver will be likely to prove serviceable. Should it be inclined to heal up too rapidly, or before the desired intention is obtained, a fresh one must be laid on. A succession of blisters will be far preferable to keeping open the first one with any kind of stimulating ointment.

In every case of acute hepatitis, the whole of the antiphlogistic plan is to be rigorously pursued, particularly where the febrile symptoms run high and endanger a termination in suppuration; and therefore it will be understood, that a farinaceous or gruel diet is to be strictly enjoined at the commencement, carefully shunning animal food in broths or otherwise; that thirst is to be assuaged by a free use of cooling drinks impregnated with vegetable acids; that cool air is to be freely admitted into the apartment of the sick; and that the intestines are to be kept perfectly open with gentle purgatives, such as a solution of some neutral salt*, or jalap with the submuriate of mercury, administered from time to time.

As in other inflammatory complaints, so in this, we may excite a diaphoresis by means of nauseating doses of tartarized antimony, to which we may join the nitrate of potass.† The pediluvium, with a plentiful use of mild diluent and cooling liquids, will also be proper. Putting the patient into a warm bath may be advisable in those cases where the skin is dry, and the pain in the region of the liver very severe. Fomentations over the painful part sometimes afford relief.

In acute hepatitis, when, after having strictly pursued the antiphlogistic course which has been pointed out for four or five days, the disease is found not to give way, we should call in the aid of mercury. Some practitioners, particularly in the East and West Indies, have recourse to it on the first attack; but the most judicious do not in general use it to effect a mercurial operation until the urgent inflammatory symptoms have been somewhat subdued by an antiphlogistic treatment. In every inflammatory affection of the liver, and where febrile excitement is present, but more particularly in northern climates, although it may be advisable to employ mercury as a purgative at the commencement of acute hepatitis, still I am of opinion that we should not then use it with the view of promoting salivation. The remedy in question, when properly used, is certainly attended with wonderful efficacy; but it appears improper on the first attack of acute hepatitis, which, like other visceral inflammations, readily yields in Great Britain to the ordinary plan of depletion.‡

‡ See Dr. Saunders's Treatise on Diseases of the Liver.

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* ℞ Infus. Sennæ Comp. f. ℥jss.	* Take Compound Infusion of Senna, one ounce and a half.
Magnes. Sulphat. ʒiij.	Sulphate of Magnesia, three drachms.
Tinct. Jalapæ, Syrup. Rhamni, āā f. ʒij. M.	Tincture of Jalap, Syrup of Buckthorn, of each two drachms.
Ft. Haustus.	Mix them for a draught.
† ℞ Haust. Salin. f. ʒx.	† Take Saline Draught, ten drachms.
Potassæ Nitratis, gr. v—x.	Nitrate of Potass, from five to ten grains.
Antimon. Tartarizat. gr. $\frac{1}{12}$—$\frac{1}{6}$.	Tartarized Antimony, the twelfth to the sixth of a grain.
Syrup. Althææ, f. ʒij. M.	Syrup of Marshmallow, two drachms.
Ft. Haustus.	Mix them for a febrifuge draught.

We may begin the mercurial course at the expiration of the fourth or fifth day of the disease. The most proper way of introducing mercury into the system will be by rubbing in a small quantity of ointment (perhaps about one drachm) in the neighbourhood of the part affected, every night, until a slight degree of salivation is excited, or rather until some very obvious effect is produced on the constitution; by which means we shall in general be able to disperse the swelling and hardness.

If rubbing in the mercury in the neighbourhood of the part is attended with any pain or inconvenience to the patient, the unction may then be applied to the groins, taking care, however, not to carry it much beyond the point bordering on salivation. With the view of assisting the discussion of the inflammation, and obviating any severe effects from the use of mercury, some gentle purgative, such as a solution of any neutral salt in an infusion of senna, may be taken every third or fourth morning.

A modern writer mentions *, that it is by no means sufficient to render the mouth sore by mercury; it must be carried to the extent of producing a copious salivation, as the disease never yields till the saliva flows freely. In this opinion I believe he is singular; but indeed the generality of the East India practitioners seem to carry the point very far. They are too fond of employing calomel in large doses. Dr. Geddes considers a decided mercurial action as generally necessary.

Should we wish the mercurial action to be soon effected, we may employ mercury internally as well as externally; and to make its effect the more certain, we may join small doses of opium or antimony with it, administering them in the form of a pill.† If we find the chloride of mercury not to answer our wishes, we should substitute the pilula hydrargyri, the patient taking one or two every night at bedtime, as may be judged necessary. In hepatic derangements, this remedy has, of late years, been very extensively and usefully employed in the United Kingdom.

If the disease yields readily, a short course of mercury will be sufficient; but if not, its use ought to be continued for, perhaps, five or six weeks.

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* See Medical Sketches, by Sir James M'Gregor, M.D.

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† ℞ Hydrargyr. Chlorid. ʒj.
Opii,
Camphoræ, āā ʒss.
Syrup. Simpl. q. s. M.
Ft. massa, in pilulas æquales xxx. distribuenda, capiat j. vel ij. pro dos.

Vel,

℞ Hydrargyr. Chlorid. ʒj.
Opii Purif. ℈j.
Antimon. Tartarizat. gr. iij.
Syrup. Simpl. q. s. M.
Ft. massa, in pilul. xxx. divid.; j. mane et nocte quotidie sumenda.

† Take Calomel, one drachm.
Opium,
Camphor, of each half a drachm.
Common Syrup, a sufficiency to form the mass, which divide into thirty pills, and take from one to two for a dose.

Or,

Take Calomel, one drachm.
Opium, one scruple.
Tartarized Antimony, three grains.
Syrup, a sufficiency to form the mass; divide this into thirty pills, and let one be taken night and morning.

I wish here to recapitulate the treatment of acute hepatitis just pointed out, and to say, that he who would most successfully combat the disease, will endeavour first to arrest and subdue the inflammatory action, as much as possible, by bleeding from the arm, and afterwards by leeches or scarifications over the region of the liver, succeeded by blisters, while mercurial purgatives are at the same time employed to clear the whole line of the alimentary canal. When by these means the vascular excitement is reduced to a certain level, then a restoration of the secretion in the liver will be the surest safeguard against future lesion, both of structure and function, in this important viscus; and this is to be obtained by a judicious exhibition of mercurials, joined with antimonials, or even with opium. Throughout the whole of this course there will be a strict necessity to avoid the remote and exciting causes which brought on the disease.

The treatment just described, though well adapted to cases of primary hepatic inflammation, will require to be much modified when there is reason to believe that the disease of the liver is consequent upon a recent or still existing phlebitis or dysentery. In this latter case the medical attendant, in combating the manifestations of a new disease, must not forget the constitutional effects produced in the patient by the primary one, and by its treatment, and must not lose sight of the indications still remaining to be fulfilled in reference to that primary disease. He must be more cautious in depleting, or abstain from depletion altogether, on account of the depletion already undergone, or of the debility already induced, or of the adynamic character of the primary affection at the outset and throughout. But besides this, he must take into account the diminished efficacy of depletion in subduing inflammation excited by a present irritating cause, such as the deposition of pus or morbid secretions, and not pursue the same course as if the exciting cause had been transitory and had passed away. The treatment of secondary inflammation and abscess is to be assimilated rather to the treatment of the second or suppurative stage of that which is primary, embarrassed though it be with greater difficulties, and accompanied by even less hope of success. We do not here mean to assert that the ascertained existence of suppuration in the liver should in all cases preclude depletion by bloodletting, but that it should make us wary in resorting to it, and determine us often to give a preference to leeching over venesection, as well for the reasons above stated, as from a consideration of what the patient has subsequently to go through, — a consideration which shows the desirableness of not so subduing inflammatory action as to interfere with that agglutination of surfaces necessary for the safe discharge of the matter formed, and of not so exhausting the strength of the patient as to render him unable to support the drain of that discharge. It is impossible to lay down precise rules in cases such as these. It is true that the phlebitis which produces the secondary abscess may be of little severity and demand little attention, yet the injury or operation which caused that phlebitis may be such as to require a special treatment; the dysentery may be too severe to be neglected. Whenever the primary disease is urgent, its cure must be our first object, in attempting which, the treatment should be modified according to the nature of the constitutional disturbance, rather than with a view to arrest the hepatic disease. Our belief is, that to remove existing complications, to moderate the local inflammation when pain or pyrexia show it to be excessive, to calm constitutional irritation, and to support the patient's strength as soon as it appears to be giving way, are almost the only objects which it is within our power to attain, and the only ones that it is desirable to pursue.

When assistance has not been procured in due time, or the means which have been employed to carry off the inflammation in the liver have not been attended with the desired effect. and suppuration has ensued, we must endeavour to promote the formation of proper pus, and the discharge of the abscess externally.

To effect the first of these intentions, the patient should be directed to take some tonic three or four times a-day, using at the same time a generous nutritive diet, with a moderate quantity of wine, which course ought to be continued until the suppuration is completed; and to promote the second intention, a large emollient poultice should be kept constantly over the part, which should be well fomented twice a-day previous to the application. When the tumour points outwardly, and has become somewhat soft, with evident fluctuation, we may, if well assured that firm adhesion has taken place, venture to make an opening in the most projecting part with a lancet or trochar. A practised hand will often ascertain the fact of adhesion of the two opposed surfaces of the peritoneum by the diminished mobility of the integuments at the part, and by a slight feeling of crepitation in the subserous areolar tissue, on making gentle pressure so directed as to cause a movement parallel to those surfaces. Dr. Budd says that he would never recommend opening an abscess in the liver till assured by a circumscribed œdema, or a slight blush on the skin, that union had taken place between the integument and abscess, and, perhaps, this is the safest rule that can be laid down. We omit to mention Dr. Graves's suggestion for insuring this adhesion of parts, because its failure in practice proves it not to be depended upon.

To facilitate the discharge of the matter, the patient ought to be placed in the most favourable position, and the belly be gradually compressed by means of a proper bandage. The dressings ought to be simple, and frequently renewed. Should the lips of the wound, after some days, seem disposed to close before the healing of the interior parts, a tent of soft lint, dipped in some simple ointment, may be inserted between them. To the end of the cure, cinchona, with stomachic bitters, wine, and a generous diet, will be proper.

Should the abscess discharge itself into the cavity of the chest, and so form purulent empyema, the proper operation ought to be performed without any loss of time. *See* Empyema.

When the matter communicates with the lungs, it is often brought up by coughing, and the patient, if prudent in the management of himself, and possessed of a tolerably good constitution, will sometimes at last recover. When the abscess communicates with the stomach, the matter is sometimes discharged by vomiting, and sometimes by stool. In this case, too, the patient will frequently recover. In such cases but little benefit is produced by medicine; but great injury may be done by imprudent or unskilful management. The bowels should, however, be kept always free from costiveness. If there be considerable febrile heat, with thirst, these may be lessened by saline draughts; or if the constitution be weak, it may be strengthened by the prudent use of tonic medicines. The diet should be light and nourishing, but in general it will be best to abstain from wine. When the weather is favourable, gentle exercise should be taken; but if it be ungenial, it ought to be avoided, as also when attended with pain or much fatigue.

The common plan of cure in chronic hepatitis is by mercury, and it is certainly the most effectual practice. It should be given in small doses and slowly, so as to keep up a brassy taste in the mouth for a considerable time, as it promotes the secretion of bile, and excites the extreme vessels on the surface. To increase the latter effect, it has, however, been found useful to combine it with a small proportion of antimonial powder, as likewise of opium, to protect the bowels from irritation.

These are cases in which the use of nitro-hydrochloric acid, as recommended by Dr. Scott, will deserve a trial. It should be employed as an external application, the region of the liver and epigastrium being sponged night and morning with a mixture containing one drachm, by measure, of each of the strong acids, in twelve ounces of plain water, or of equal parts of this and rose water. This sponging may be continued for a considerable period, until either the recovery of the patient, or the want of benefit, lead us to desist. The strength may be varied according to the effects. We have, however, little experience of this plan of treatment, but know it to be in high favour with some Indian practitioners, who use it as a substitute for mercury.

The next most salutary process is to keep up the regular peristaltic motion of the intestines, and excite the mouths of the excretory ducts of the liver. With this view, one or two of the pills prescribed below * may be taken occasionally at bedtime, succeeded the ensuing morning by a draught composed of some neutral salt.

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* ℞. Extract. Colocynth. C. ʒj.
Hydrargyr. Chlorid. ℈j.
Antimon. Tartarizat. gr. ij.
Ol. Carui, ♏v.
Syrup. Simpl. q. s. M.
Ft. pilulæ xxx.

* Take Compound Extract of Colocynth, one drachm.
Calomel, one scruple.
Tartarized Antimony, two grains.
Oil of Caraway, five minims.
Common Syrup, a sufficiency to form the mass, which is to be made into thirty pills.

Our attention is at the same time to be directed to the cuticular discharge, which ought to be promoted by the most gentle means, such as moderate exercise, and flannel next to the skin. When hepatic obstructions exist, with too great a determination to the bowels, keeping them in an irritable state, the utility of flannel is apparent. The assiduous and frequent application of the flesh-brush, or friction with the hand, over the hypochondriac region, will be found to excite the healthy action of the biliary organ in no slight degree. A tepid bath will be useful; but some caution will be requisite in avoiding subsequent chilliness. Warm mineral waters may also be taken internally. The nitro-muriatic foot-bath has been recommended.

When there is much local uneasiness, repeated blisters may be had recourse to with some advantage. General bleeding is never necessary in chronic hepatitis: in a few instances, topical may be serviceable.

Among the local means, I beg leave to observe, that in those instances where the liver has been exceedingly enlarged, decided benefit has sometimes been derived from the application of a plaster of ammoniacum with mercury, spread largely over the diseased surface, so as to act medically, as well as on the principle of a bandage in giving some support.

In that species of diseased liver which arises from an immoderate use of vinous or spirituous liquors, a mercurial course has been objected to by Dr. Trotter. In the tubercular or scirrhous liver, he tells us, it had seldom appeared to him to be of any service, beyond its action in keeping the bowels open, when costiveness was to be guarded against. My own experience, however, does not lead me implicitly to adopt this conclusion; on the contrary, in more than one instance of incipient scirrhous liver slightly complicated with dropsy, I have seen mercury employed with advantage, when combined with bitter and warm purgatives, such as senna, with some aromatic, or we may give the decoctum aloes compositum. Mercury, however, will not fail to prove hurtful in those cases where the structure of this viscus is considerably injured.

Tubercles in the liver are often connected with an intemperate mode of living; but they will sometimes occur in persons who have passed a uniformly temperate life. They are frequently the cause of ascites; but sometimes they do not produce this effect. Although medicine seldom procures any permanent benefit when the liver becomes tuberculated, still, by temperate living, by gentle exercise, taken daily when the weather is not ungenial, and by the bowels being kept rather open, patients will not unfrequently live for some years with such complaints; but I do not recollect, during a practice of fifty-five years, any instance of a person *actually* recovering under such a state. A palliative treatment is all that should be attempted in such cases.

We have been informed, that of late the nitric acid, largely diluted with water and syrup [*], has been used in the East Indies in chronic affections of the liver, and it is said with much benefit. As an auxiliary remedy, it certainly may be employed with safety and advantage. Where the disease arises in a person of a scorbutic habit, there is no doubt that the use of mercury would be highly improper, as it would infallibly increase the symptoms, and hasten the fatal termination thereof; and in such cases, the nitric acid may be given with much advantage, as it will not only relieve the hepatic affection, but may likewise, in some degree, amend the scorbutic tendency.

In the treatment of chronic inflammation of the liver, great commendation has been bestowed upon the taraxacum (dandelion) by a late writer [†], who tells us that he has seen the most decided advantage, both in incipient scirrhus of the liver and also in several chronic derangements of the stomach, from its employment in the dose of half a drachm of the extract twice a-day. Either a strong decoction, or the fresh expressed juice, in doses of from two ounces to four, two or three times within the twenty-four hours, will, however, be found more active preparations.

Enlargements of the liver and spleen are sometimes the consequence of long-continued intermittents; and they not unfrequently resist the effects of mercury, although the salivary glands have been sufficiently excited. In cases of this nature, we may make trial of the succus inspissatus conii.

We cannot boast of much success in the treatment of these diseases, so far as the organs chiefly implicated are concerned. We have neither effected in our own practice, nor witnessed in that of others, any considerable reduction in their size when the enlargement has been of long continuance. Much benefit, however, to the constitution of the patient has accrued from the use of brisk purgatives, as of from two scruples to a drachm of the Pulvis Jalapæ Compositus every alternate morning, while the Mistura Ferri Composita, or Quinine, in the dose of two grains in solution or pill, was taken thrice a day. We prefer, in general, the more active aperient thus given to milder laxatives, more frequently repeated; but where the severer action was distressing, or appeared objectionable, or even with the view of varying the treatment, we have given the quinine thrice a day, with so much cathartic extract as would produce about two free evacuations daily; or have employed a form, modified from one used in other cases by Dr. Abercrombie,

[†] Dr. Robert Pemberton's Treatise on the Abdominal Viscera, p. 42.

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[*] ℞. Acid. Nitric. Dilut. ♏vj.—x.	[*] Take Diluted Nitric Acid, from six to ten minims.
Aq. Puræ, f. ʒxij.	Pure Water, twelve drachms.
Syrup. Cort. Aurant. f. ʒij. M.	Syrup of Orange Peel, two drs.
Ft. haustus, ter quaterve die sumendus.	Make them into a draught, which is to be taken three or four times a-day.

consisting of five grains of Compound Cinnamon Powder, with two of Sulphate of Iron, and three grains of Scammony, or so much of this last purgative as will produce the effect just mentioned. Under this plan of treatment, we have seen the appetite and strength of the patient improve, and the complexion regain its natural hue, and the tendency to dropsical swellings relieved, notwithstanding the unaltered size of the diseased viscera. A nutritious diet should be allowed at the same time, and this may be done with greater safety and advantage to the patient than where a free action of the bowels is less attended to. We consider the plan here recommended more efficient for good than that which should embrace a more restricted diet, and more sparing alvine excretions.

The diet best adapted for persons labouring under chronic hepatitis, is such as is nutritive, and easy of digestion; avoiding salted meats and greasy substances. By degrees it may be improved by the addition of broths, light animal food, &c., until health is perfectly restored. He who labours under obstructed liver, and hopes to prolong his existence, must abandon what are called the pleasures of the table, and observe a rigid temperance with respect to diet. If wine is drunk, it ought to be diluted with water; but in most cases this last alone will be the best beverage. Malt liquors will seldom agree, and spirituous ones ought to be shunned as poison. Late hours and night air ought to be cautiously avoided.

In the chronic affections of the liver which occur to residents in the East and West Indies, removal to a colder climate is often found indispensably necessary. Such as labour under chronic affections of the liver in India or the West Indies, should never return to Europe in the winter. Those of the former who cannot undertake the long and expensive voyage to Europe, ought to change a continental for an insular situation. The most proper places will be, Prince of Wales's Island, which enjoys a milder air and a lower range of temperature than any of the Presidencies; or St. Helena, which approximates more to the climate of Europe than that of any other intertropical situation. Those of the West Indies may go to America, and they will be likely to experience considerable benefit from the voyage and sea air.

The complicated diseases which are often brought on by a long residence in warm climates, affecting the secretion of bile, the functions of the stomach and alimentary canal, and which generally produce organic derangement in some part of the hepatic system, often receive much benefit from the Bath waters, if used at a time when suppurative inflammation is not actually present; and they will certainly prove a good auxiliary to other proper means.

Cheltenham water may also be taken with singular advantage by those who labour under any chronic affection of the liver; and this spring is, indeed, the resort of most of those who have had their biliary organs injured by a long residence in a warm climate. This water, besides containing salts of a purgative nature, is likewise a chalybeate; and the iron is suspended by carbonic acid, of which gas the water contains about an eighth. Its great efficacy, however, in chronic hepatitis is owing to the gentle continued purging which it excites.

The Seidlitz or Epsom salts, in doses so regulated as to keep up a gentle but regular action of the bowels, are probably equally effectual with those contained in the Cheltenham waters.

Persons of a bilious habit, and who are at the same time costive, will find much benefit by taking two or three of the aperient pills here recommended*, at night, or in the morning, as necessity may require.

When biliary derangement is conjoined with dyspepsia, the treatment recommended under such a complication of disease in dyspepsia ought to be adopted. See this.

SPLENITIS, OR INFLAMMATION OF THE SPLEEN.

THIS disease comes on with rigors, succeeded by heat, thirst, and other febrile symptoms; there is an anxiety and straitness in the præcordium, with difficult respiration, often conjoined with a cough without expectoration. The patient complains also of external heat, tension, pains in the left side, which sometimes extend through the whole region of the abdomen, or shoot through the diaphragm, and into the left shoulder. The pains are increased on pressure, and are pulsatory, pungent, and burning, in various degrees. The pulse on the left side is sometimes partially suppressed, often intermittent, weak, and not quick. There is lassitude and loss of strength, watchfulness, and sometimes delirium; dyspepsia, anorexia, vomiting of green bilious matter, and sometimes difficulty of voiding urine, from an affection of the kidney or bladder; swelling in the region affected, representing the form of the spleen; faintings, and bleeding from the nostrils at the height of the disease: but the most remarkable symptom which attends is the dark bloody vomiting, which most authors have considered as peculiar, and have designated by various names. By the ancients it was termed *atra bilis*. At the commencement, the intestines are rather confined, but they soon become relaxed, and emit substances somewhat coloured by black blood.

Some or other of the above symptoms are no doubt at times observed in severe inflammations or affections of the spleen. Yet it is certain, that the diseases of this organ are often very obscure during the life of the patient, so as not unfrequently to be overlooked, and frequently to defy any precise diagnosis. To this purport M. Roche, in his article in the "Dictionnaire de Médecine et de Chirurgie Pratiques," after enumerating the various maladies to which the spleen is liable, observes, that they are much better known to morbid anatomists than to practitioners; the majority arising and advancing so quietly, producing so little functional disturbance, that their existence is seldom suspected during life. Dr. Abercrombie, too, says of inflammatory action in the spleen, that it occurs most frequently in a chronic form, and terminates, sometimes, by suppuration, at others by a peculiar black degeneration and softening, and that in both cases the disease is generally protracted, and the symptoms are often exceedingly obscure. He gives a case, occurring in his own practice, in which debility and emaciation gradually increasing for six months were the only symptoms up to the appearance of a diarrhœa, which, in three days, terminated in death. The spleen was found to contain pus in an irregular cavity in its centre, while in other portions it was softened.

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* ℞ Extract. Colocynth. C. ʒj.
——— Jalapæ, ʒss.
Sapon. Venet. ʒj.
Ol. Carui, ♏viij.
Syrup. Rhamni, q. s. M.
Ft. massa, in pilulas xl. distribuenda.

* Take Compound Extract of Colocynth, one drachm.
Extract of Jalap, half a drachm.
Soap, one drachm.
Oil of Caraway, twelve drops.
Syrup of Buckthorn, a sufficiency to form the mass into forty pills.

Like the liver, the spleen is often attacked with chronic inflammation, and in time becomes enlarged and indurated. Sometimes suppuration ensues, and forms an abscess.

The causes of the disease are most generally the same with those of other inflammatory diseases; but enlargements of the spleen are frequently the consequence of long-continued intermittents; and these, as well as indurations of the liver, are called ague-cakes. They arise, no doubt, from too great a determination of blood to these viscera during the several attacks of the cold fits.

With respect to the prognosis in splenitis, it need only be observed, that, like other inflammations, it may terminate either in resolution, suppuration, or scirrhus. Sometimes it is carried off by a vomiting of dark-coloured matter resembling coffee-grounds; sometimes by a diarrhœa; and sometimes by a hæmorrhage from the hæmorrhoidal vessels. The vomiting of grumous matter is, under common circumstances, to be considered a favourable and critical evacuation, yet it sometimes proceeds to a fatal excess. Where splenitis terminates in suppuration, and the contents of the abscess are evacuated in the cavity of the abdomen, the event will prove fatal sooner or later; but a simple enlargement of the spleen is often supported for many years without any very great inconvenience or hazard to the patient.

Examinations of dead bodies show that the spleen is subject to inflammation of its peritoneal coat, producing false membrane, and adhesions to neighbouring viscera. Its substance may be the seat of one or more abscesses, or may undergo softening, and a kind of black degeneration, with or without enlargement of size. It may exhibit considerable enlargement, yet retain its healthy structure, or this may be unnaturally hard. Tubercles are also found in its substance, and hydatids are not unfrequently formed in it. Stony concretions have been occasionally, but rarely seen in it. The conversion of its coats into cartilage is a more frequent occurrence, this change taking place especially on its convex surface. Laceration has been known to arise either from external violence, or during the cold stage of a fit of ague. Enlargement of the spleen is frequently, but not invariably accompanied by that of the liver.

During the acute stage of splenitis, we must adopt the antiphlogistic plan, by general and topical bleedings, by purging frequently with the submuriate of mercury combined with jalap, and by the repeated application of a blister over or near the part affected. If the inflammation should terminate in suppuration, the abscess is to be encouraged to discharge its contents externally by fomentations and poultices. Where its termination is an enlargement and induration, the iodide of potassium will deserve a trial; or, instead of this, we may employ the bromide of potassium, as recommended by Dr. R. Williams, commencing with a dose of three grains, to be taken thrice a day, and gradually increasing it. We confess, however, that neither of these medicines has produced any marked benefit in this class of diseases in our hands, and we are not aware that the experience of others has confirmed the expectations which the results of some cases published by this author were calculated to excite.

The most important practical observation on organic diseases of the spleen, usually made, is, according to Dr. Alison, that they are seldom benefited by mercury, which very often acts violently on those subject to them, and that blisters and combinations of laxatives, with bitters and chalybeates, have generally appeared the most useful remedies.

NEPHRITIS, OR INFLAMMATION OF THE KIDNEYS.

Nephritis, properly considered, appears to be of two kinds; the one arising from the general causes of inflammation, and being seated principally in the external membrane of the kidney; the other occasioned by the stimulus of gravel or a stone in the pelvis of it, and the inflammation occupying the interior parts. It is intended in the present description to include both these varieties, the former of which, however, is rare, except when arising from mechanical injuries, while the latter often originating in the same causes as nephralgia, is distinguished from this last only by the more active inflammation, and the distinct pyrexia which accompany it. A subacute, or chronic, inflammation of the substance results, also, from the causes particularised in the article on albuminuria.

This species of inflammation may be distinguished from the colic, by the pain being seated very far back, and by the urine being of a deep-red colour, voided frequently, and in small quantity at a time.

Nephritis is to be distinguished from lumbago by the seat of the complaint, discovered upon pressure; by the dysuria and frequency of micturition, by its being often attended with vomiting, and by the pain extending along the course of the ureter, and not being much increased on motion, or by assuming an erect posture after stooping.

There is often a peculiarity in the carriage of those affected with inflammation of one of their kidneys; which assists the diagnosis. We allude to a slight leaning towards the side affected, not so great as to produce pressure on the organ, but enough somewhat to relax the lumbar muscles lying over it.

It is to be distinguished from a calculus in the kidney or ureter, by the symptoms of fever accompanying or immediately following the attack of pain, and these continuing without any remarkable intermission; whereas in a calculus of the kidney or ureter, they do not occur until a considerable time after a violent pain has been felt. In the latter case, too, a numbness of the thigh, and a retraction of the testicle, on the affected side usually take place, together with nausea and vomiting.

The causes which give rise to an inflammation of the kidneys are, external contusions, strains of the back, acrids conveyed to the kidneys in the course of the circulation, violent and severe exercise either in riding or walking, exposure to cold, and sand or stone in the kidney. In some habits there is an evident predisposition to this complaint, particularly the gouty; and in these there are often translations of the disease to the kidneys, which very much imitate nephritis. In plethoric and inflammatory habits, an immoderate use of spirituous liquors may give rise to nephritis.

An inflammation of the kidney is attended with more or less of pain on the affected side, extending along the course of the ureter, and there is a frequent desire to void urine, with much difficulty in passing it; the skin is dry and hot; the pulse frequent and hard; the tongue loaded with fur; the patient feels great uneasiness when he endeavours to walk or sit upright; he lies with the most ease on the affected side, and is incommoded with nausea and vomiting; and there are often costiveness and pains resembling those of colic.

The condition of the urine varies in different cases of inflammation of the kidneys. The changes of these organs associated with albuminous urine are now mostly referred to inflammatory action, generally, indeed, only of a subacute or chronic character, but liable to occasional exacerbations, during which there may be a greatly diminished, or even suppressed, secretion. In the former case the presence of albumen may be recognised by the joint action of heat and nitric acid, as spoken of in the article on Albuminuria. The flocculi thus produced will be brownish or blackish, if the colouring matter of the blood be at the same time effused, instead of white, as they are when this is wanting. In other cases also of excessive irritation of the kidneys, arising from poisons, as corrosive sublimate and cantharides, we have a total suspension of the secretion, or a greater, or less, admixture of blood. We conceive, then, that a suppression of urine, or its excretion, mixed with albumen or blood, would add strength to the inferences drawn from the other symptoms, as to the seat and nature of the malady. Pus, when present in urine having an acid or neutral reaction, is, by agitation, easily diffused through the fluid; while it subsides readily on being left at rest. It may be known by its conversion into a viscid gelatinous mass, on the addition of about an equal bulk of liquor potassæ to a few drops of the urinary sediment in which it exists. If the urine be already alkaline, the purulent deposit will appear in it as a viscid fluid, not soluble in acetic acid, but assuming a more opaque and diffluent aspect on its addition. In any case, to render the proof of the presence of pus complete, the supernatant urine, or that which is separated by filtration, should show the existence of albumen in it under the action of the tests described above. The detection of pus, like that of albumen or blood, is to be considered only as corroborative of the other symptoms of nephritis, either preceding or accompanying it.

In forming an opinion as to the event, we are to draw our conclusion from the severity of the symptoms, and from the quantity and appearance of the urine which is voided. When the disease is protracted beyond the seventh or eighth day, and the patient feels an obtuse pain in the part, has frequent returns of chilliness and shiverings, there is reason to apprehend that matter is forming in the kidney, and that suppuration will ensue. Remission of pain, fever, and tension, followed by a copious secretion of high-coloured mucous urine, universal diaphoresis, or a flow of blood from the hæmorrhoidal veins, are favourable symptoms.

On examining the bodies of those who have died of acute nephritis, we find the kidney red, gorged with blood, swollen, easily torn: small collections of pus are sometimes met with scattered through its interior, and sometimes calculi, either free or implanted in its substance which they have torn with their angles. As the result of a chronic nephritis, the kidney is often hardened and considerably increased in volume. In some cases the substance has totally disappeared, and we find in its place only a mass of pus inclosed in a sac formed of its membranes. Lastly, it is found converted into cerebriform, or fatty or bony matter, or filled with worms or hydatids.

In the cure of nephritis, our chief reliance is to be placed on blood-letting, general and local, assisted by fomentations, the use of a warm bath, emollient clysters, and mild purgatives, such as the oleum ricini.

On the first coming on of this complaint, a quantity of blood, proportioned to the age and habit of the patient, ought immediately to be taken away; and if the bleeding does not afford considerable relief, on the same day, or on the next at furthest, topical bleeding, with several leeches over the kidney affected, should be resorted to and repeated if necessary.

After bleeding, we may advise flannel cloths wrung out of a warm decoction of emollient herbs, or spongiopiline dipped in warm water, to be kept constantly applied over the part which is painful; and by way of internal fomentation, an emollient clyster may frequently be injected. The patient is at the same time to be directed to drink plentifully of mild diluents, such as barley-water, thin gruel, whey, linseed or marshmallow-tea, &c.

The intestines are to be emptied by gentle aperients*, employed as frequently as the occasion may require, in addition to emollient clysters, as constipation ought carefully to be guarded against.

Should these means have been adopted without affording relief to the patient, he ought then to be put into a warm bath, repeatedly, for about fifteen minutes each time. The remedy will produce a powerful determination to the surface of the body, and greatly increase the action of the cutaneous exhalants.

Mild diaphoretics, such as the citrate or acetate of ammonia, combined with small doses of tartarized antimony, will at the same time be proper.

When the pyrexial symptoms do not from the first run high, or have subsided under treatment, opiates may be used occasionally to soothe pain, and may be added to the clysters. In nephralgia arising from the presence of calculus, they are very important remedies; but not in pure nephritis.

In nephritis the application of blisters would be improper, as they are apt to irritate the urinary organs and vessels. Rubefacient liniments over the region of the kidney may perhaps be of some service, but we would exclude turpentine from their composition.

It has been mentioned, that a difficulty of making water is one of the symptoms attendant on this disease; to obviate it, some practitioners give heating diuretics, such as turpentine, balsams, &c. The practice seems very improper, and ought not to be followed. It will be more advisable to apply warm fomentations over the region of the bladder and kidney, to inject emollient laxative clysters, and to make the patient drink frequently of warm diluents.

A decoction of the dried leaves of the peach-tree (*Amygdalus persica* Linn.), prepared as mentioned under the head of Hæmaturia, and drank in the quantity of a pint a-day, has been found a very useful remedy in many cases of nephritis.

When the urine deposits a quantity of muco-purulent matter, showing that the inflammation has terminated in suppuration, or that an ulcer has already formed in the kidney, balsamics and cooling mucilaginous medicines, with a long-continued course of chalybeate waters, but more particularly those of the Bristol wells, will be very proper. The cinchona bark may also prove serviceable. The tinctura benzoës composita has been found beneficial.

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* ℞ Ol. Ricini, f. ʒvj.
Mucil. Gum. Acaciæ,
Aquæ Fœnicul. āā f. ℥ss.

Ft. haustus, pro re natâ repetendus.

* Take Castor Oil, six drachms.
Mucilage of Gum Acacia.
Fennel Water, of each half an ounce.
Mix them as a draught; to be repeated as occasion requires.

One of the best medicines, however, with which I am acquainted, in such cases, is the uva ursi, which may be given in doses of half a drachm, or a drachm three times a-day. I have tried it in several instances, and in general with a happy effect. A decoction of the leaves of the *Diosma crenata* (buchoo plant, — see Catarrhus Vesicæ) has also been found a useful remedy in allaying morbid irritation of the bladder and kidneys, accompanied with a muco-purulent secretion. The *Pareira brava* may also deserve a trial, but is often found too stimulating.

Great quiet of body, and uniform temperance of living, are useful in mitigating symptoms and retarding the progress of the disease. A patient labouring under inflammation or an abscess in the kidney should live almost entirely upon vegetable food, and abstain from wine and other fermented liquors. Emollient and thin mucilaginous liquors may be drunk plentifully, as copious dilution will be of service.

Where an inflammation of the kidney has arisen from the stimulus of a stone or large piece of gravel lodged there, we should have recourse to the exhibition of anodynes and opiates in considerable doses, both by the mouth and by clyster, together with the other means advised under these particular heads.

In renal hæmorrhage, where there is no pyrexia, as well as in most other internal hæmorrhages, alum, and the acetate of lead, are the remedies chiefly to be depended upon. Gallic acid, the diluted sulphuric acid, and the tincture of sesqui-chloride of iron, have on some occasions produced great benefit. In mitigating the disease, general and topical bleeding, but more especially the latter, are sometimes of use.

Those who are liable to frequent returns of nephritis ought carefully to avoid getting wet in the feet, as likewise all exposures to cold; they ought to lie on a mattress in preference to a featherbed; and their exercise should be moderate.

ALBUMINURIA. BRIGHT'S DISEASE OF THE KIDNEY.

The presence of albumen in the urine is the diagnostic mark of the disease, or rather of the tribe of diseases, to be considered under this head: hence the name of albuminuria, now commonly applied to it; while its second appellation is as unanimously accorded in order to perpetuate the title of Dr. Bright, to be considered as the localizer of the malady, and the leader in educing those facts regarding its nature, its consequences, the frequency of its occurrence, and the fatal or formidable character of its attacks, a knowledge of which has shown it to be one of the most common, most proteiform, and most destructive of the many ills with which humanity is afflicted.

The occasional and even frequent presence of blood, or serum, in the urine of persons labouring under dropsy, was not a new discovery at the time when the distinguished physician just referred to published in 1827 his reports of medical cases, among which are several instances of the disease in question, so detailed and illustrated as to give a more specific interest to this symptom than it before possessed, and to connect it with morbid changes of the kidney, previously almost overlooked, but then first described and classified, and made known to others by beautiful pictorial representations.

The predecessors of Dr. Bright, who had noted and recorded their observations upon the occurrence both of the colouring and albuminous matters of the blood in the urine of dropsical patients, appear to have been Mr. Cruikshank, Dr. Wells, and Dr. Blackall. Priority in this matter is conceded, and, we believe, is due to the first of these, Mr. Cruikshank having, in the year 1798, in some observations appended to the second edition of Dr. Rollo's Treatise on Diabetes, mentioned that the urine in dropsy often contains serum. This we learn from the later of two papers on the same subject, written by Dr. Wells, and published in the third volume of a Society for the Improvement of Medical and Chirurgical Knowledge. Dr. Blackall, too, says of Mr. Cruikshank, that he notices the serous urine more precisely than any other author has done, and professes to follow him in considering dropsies in which the urine is not coagulable by heat apart from those in which it is so coagulable in a greater or less degree.

We shall proceed to investigate how much was made known or might have been gathered from the writings of Drs. Wells and Blackall prior to the time at which the genius of Dr. Bright was directed to the elucidation of those diseases of which the presence of albumen in the urine was the peculiar and important characteristic.

Now it appears that, in the first instance, Dr. Wells's attention was directed to Albuminuria as a symptom of those forms of dropsy which are such common consequences of scarlatina, and was first arrested by the appearance of a redness of the urine which he correctly referred to an admixture with the red colouring matter of the blood. Thus, in his paper on the dropsy after scarlatina, which was read in November, 1806, though not published till six years afterwards, he speaks, in the first instance, of one patient in whom the urine became red on the sixth day of the disease, and remained so till the twentieth, while in another, who died on the ninth day, the urine was found red upon the eighth; and he is at some pains to show that the urine, in these cases, resembled in its appearance and reactions those mixtures which he formed artificially by adding blood to healthy urine; so that he confidently states that there was no doubt of the unusual red colour being occasioned by the red matter of blood. Farther on he proceeds to say that there was another part of the blood which he had almost always found present in the urine of persons affected with this dropsy, which is the serum. In a later paper, read in February of the year 1811, he announced observations embracing cases of dropsy unconnected with scarlatina, and so numerous as to extend to one hundred and thirty examples, out of which no fewer than seventy-eight were found to present the phenomenon of serum or albumen in the urine. Thus, so early as the year 1811, had the almost universality of the existence of albuminous urine in the dropsy consequent on scarlatina, and its extreme frequency in cases arising independently of this disease, been both noted and recorded. If we look for farther intimations with regard to this affection, we find it remarked that a diarrhœa is often present; and, again, in reference to its proximate cause it is stated that the presence of serum in the dropsical urine appears to be not only independent of weakness, but, on the contrary, to be connected with too great action in some part of the system. These last remarks, however, though confirmed by subsequent experience, may be regarded as too little supported by specific facts; perhaps, also, too vague and indeterminate in their bearing to be entitled to much weight.

Dr. Blackall appears to have written his Treatise upon Dropsy without deriving any suggestions from the papers of Dr. Wells, since he tells us that he had only become acquainted with them in time to allude to them in the Appendix to the first edition of his work. He, in common with his predecessors, recognises scarlatina as a cause of the albuminous condition of the urine, and assigns, as other sources of this symptom, the action of mercury upon the system, the impression produced by drinking cold water when heated, and the action of cold generally and of intemperance upon the constitution. Of these supposed causes of the disease, it is only the second which has been rendered doubtful by subsequent observations, especially by those of Dr. G. O. Rees, the power of scarlatina, of intemperance and of cold in producing it, being now well established. We have seen that Dr. Wells considered an inflammatory condition as causing or accompanying albuminuria. On this point Dr. Blackall speaks yet more distinctly. In a few of his cases, inflammation of the pleura or pericardium had been ascertained to exist by actual inspection after death, and in others its presence in some organ of the body had been rendered probable by the symptoms. This tendency to inflammation seems to have been strongly impressed upon his mind, since, in referring to the cases he had adduced, he says of them that "they speak for themselves, and that it is unnecessary to recal to the reader's recollection those signs of inflammatory disposition which occur in many of them; the cough, pain, and stricture of the chest in some, the hard pulse in others, the occasional inability of lying on the affected side, the buffiness of the blood wherever it was drawn." Doctor

Blackall conjectures that in some cases of dropsy the urine is crude, not possessing the appropriate characters of urine, and supposes it to be particularly deficient in urea; he does not, however, suggest any connection between this deficiency and the presence of albumen in this fluid. This deficiency, however, was pointed out as existing in a specimen of albuminous urine submitted by Dr. Baillie to analysis by Mr. Brande. A single observation was quite insufficient to establish the fact of its general occurrence. There is one circumstance which is remarkable, if not surprising, that we observe alike in the publications of Dr. Wells and Dr. Blackall; namely, that, although each of them has recorded instances in which the kidneys of persons who had passed bloody or serous urine had been found diseased after death, they not only hesitated but seemed averse to believe in any connection between an abnormal state in that organ and that modification in its secretion which was the subject of their writings. Thus Dr. Wells says, at page 209. of the volume already quoted, that considerable pains and a sense of weakness in the loins frequently accompany this species of dropsy. I have sometimes attributed such symptoms to an affection of the kidneys; but perhaps improperly, as patients in this disease have as frequently severe pains in the limbs, particularly the lower. And, again, he observes, at page 220., that "in a fatal case of dropsy with albuminous urine, the kidneys were much harder than they usually are, their cortical part was thickened and changed in its structure from the deposition of coagulable lymph, and there was a small quantity of pus in the pelvis of one of them." He then adds, however: "The morbid appearances in the kidneys might be altogether unconnected with the morbid secretion."

Dr. Blackall, at page 270. of the third edition of his work on Dropsies, discusses and refutes Dr. Darwin's theory that the serum passed into the bladder by an inverted motion of the lymphatic system. He asks whether it be possible that, according to the common course of the circulation, the dropsical accumulations may supply the albumen in the urine; and his arguments satisfactorily negative this supposition; but he nowhere suggests any adequate explanation of this phenomenon, and nowhere refers it to any morbid change in the kidneys themselves.

In the first volume of his Reports of Medical Cases, published in 1827, Dr. Bright announced the constant coincidence of disease of the kidneys discovered after death with the albuminous condition of the urine, and his inferences from this fact are such as all subsequent observation has tended to confirm. We shall give the author's own words: "I have never yet, he says, examined the body of a patient dying with dropsy, attended with coagulable urine, in whom some obvious derangement was not discovered in the kidneys. Whether the morbid structure, by which my attention was first directed to this subject, is to be considered as having in its incipient state given rise to an alteration in the secreting power, or whether the organic change be the consequence of a long continued morbid action, may admit of doubt: the more probable solution appears to be that the altered action of the kidney is the result of the various hurtful causes influencing it through the medium of the stomach and the skin, thus deranging the healthy balance of the circulation, or producing a decidedly inflammatory state of the kidney itself: that when this continues long, the structure of the kidney becomes permanently changed either in accordance with and in furtherance of that morbid action; or by a deposit, which is the consequence of the morbid action, but has no share in that arrangement of the vessels on which the morbid action depends."

"In all cases in which I have observed the albuminous urine," he writes again, "it has appeared to me that the kidney has itself acted a more important part, and has been more deranged both functionally and organically than has generally been imagined. In the latter class of dropsical cases (which may be called chronic) I have always found the kidney decidedly disorganised. In the former (or acute cases) when very recent, I have found the kidneys gorged with blood. And in mixed cases, where the attack was recent, although apparently the foundation has been laid for it in a course of intemperance, I have found the kidney likewise disorganised."

Besides these general statements, this author attempts to classify the varieties of the morbid appearances in the kidneys, associated with albuminous urine, and gives coloured representations of many of the specimens which had occurred to him.

The chemistry of this form of disordered urine is not neglected by him, since he engaged the skilful assistance of Dr. Bostock in making numerous analyses. That eminent chemist considered that his experiments warranted the conclusion that the specific gravity of dropsical urine which coagulates, is less than that of urine in the healthy condition of the system, although the particular samples submitted to him seem to have had a greater density than is commonly remarked in this disease. Some experiments were also instituted upon the blood of patients labouring under albuminuria, the frequent inflammatory appearance of the clot was observed, the diminished specific gravity of the serum was suspected in many and proved in one of the cases, while the existence of urea in the blood was also rendered probable. One case is spoken of as furnishing an example of the blood exhibiting a very great deficiency of albumen, at the same time that this principle was passing off from the system by means of the kidney, while this organ had its appropriate office of secreting urea nearly suspended. All these observations and surmises have been verified and enlarged by later analysts.

We have thought these prefatory remarks not misplaced regarding the early history of a disease, the recognition of which is comparatively of modern date, the pathology of which is receiving fresh light from day to day, a disease to which we may trace the origin of many other diseases, and one so common and so fatal, that we are never without many sufferers from it under our care, some with the sure stamp of death upon them. We go on to give a more detailed account of it as at present known to us.

So numerous and so varied are the different diseases which result from, or are attended by, the presence of albumen in the urine, that we scarcely know how to particularise the symptoms that should lead us to search for it. There can, however, be no doubt that a greater or less amount of dropsy of the areolar tissue is the malady with which it is most frequently associated, so that wherever this is present or is known to have existed previously, the examination of the urine should never be omitted. This investigation will be the more incumbent upon us if the dropsy be a consequence of scarlatina or any other eruptive or continued fever; if it have suddenly arisen from exposure to cold, if it occur in those whose pallid lips and general cachectic appearance indicate that their constitutions have suffered from habits of intemperance or been deteriorated by continued exposure to wet and cold, who have dwelt in dark and ill-ventilated abodes, and been ill fed and ill clothed. The absence also of any manifest cause of obstructed circulation in the heart or in the lungs will render this search still more imperative. If, again, there be a pain or weight about the loins which seems referable to one or both of the kidneys, if the patient have occasion to pass his urine often in the night, and if he be known to have indulged in the use of spirits, and suffer from nausea or vomiting on rising in the morning, even though no dropsy be present, it will be prudent, if not necessary, to institute an inquiry into the condition of his urine. Convulsive or apoplectic seizures arising in those not predisposed by birth, by conformation, or by age, to such attacks, and obstinate vomitings, either alone or alternating with diarrhœa, and unchecked by remedies calculated to allay a primary irritability of the stomach, these are among the symptoms which should awaken a suspicion of the existence of albuminuria. The presence of any one or the combination of several of these conditions constitute the principal but not the only warnings which should lead us to take the simple measures necessary for the solution of our doubts upon this point.

In this, as in other examinations of the urine that passed on first getting up in the morning should be selected for our observations. It is almost unnecessary to say that it should be obtained free from admixture, and that it is desirable to have it in a recent state within a few hours, if it be practicable, of the time when it was voided. It is enough to mention that the colour of albuminous urine has been observed to differ from that of the healthy secretion in being reddish, or smoke-coloured, from the admixture of some of the colouring matter of the blood, or pale and straw-coloured, which is the tint that we have ourselves most commonly remarked. If it is to be tested by chemical reagents, it will be best in the first instance to filter it, or so much of it as may be sufficient for floating a small hydrometer in a narrow vessel, in order that its specific gravity may be ascertained. That of healthy urine is considered to fluctuate between 1015 and 1025 degrees, and it is at least as great in the acute form of albuminuria. That of albuminous urine, when the disease is chronic, will be found generally below, and often much below the former of these limits. It is well to ascertain by means of blue and reddened litmus paper, whether the reaction of the filtered fluid be acid or alkaline; that is, whether it give a red tint to the blue, or restore the blue tint to the reddened paper. A small portion may then be put into a test tube, and boiled over a candle or a spirit lamp; and after boiling a few drops of nitric acid should be added. The combined action of heat and nitric acid is the chemical test most to be relied upon, and may be considered almost free from fallacy. Heat alone will often precipitate the earthy phosphates; but these are re dissolved by the acid. Nitric acid alone will sometimes cause a deposit of lithic acid; but this does not happen when the nitric acid is in considerable quantity, and heat applied. With these reagents the coagulum formed has always separated readily; we have never found them produce that gelatinous condition mentioned by Dr. Bostock and some of the earlier experimenters. In some cases, where the quantity of albumen has been small, we have seen it carried up with the bubbles produced by boiling, and remain in the froth at the surface; but after standing for some hours this will disappear, and the small coagula will subside to the bottom. The nitric acid very commonly produces a darker, and somewhat reddish tint in the liquid, which is due to its action upon the colouring matter of the urine itself; if the precipitate obtained be blackish instead of pale, this indicates the presence of blood. Dr. G. O. Rees has pointed out that coagulation is sometimes produced by nitric acid in the urine of those who have long been taking copaiba or cubebs medicinally; but in these instances the particles float on the top of the liquid even after the lapse of some hours, which circumstance sufficiently distinguishes them from the coagula of albumen.

Dr. G. Johnson, in a paper published in the 30th volume of the Medico-Chirurgical Transactions, states that the best evidence of this change in the kidney being in progress (that is to say, of one of those changes, which, when advanced, is accompanied by albuminuria) is the presence in the urine of moulds of the urinary tubules, composed of more or less disintegrated epithelium; and such evidence, he adds, I have repeatedly obtained when no albumen could be obtained by the ordinary heat and nitric acid tests. In collecting the urine for this examination care must be taken to obtain the sedimentary portion; the upper part of the liquid may be poured off, and the lower three or four ounces, or the whole of it, if the quantity be small, may be placed in a conical glass, like an ale glass; and after it has stood for a short time a few drops may be taken from the lower part of the liquid with a pipette, placed in a small cell, then covered with a thin plate of glass, and examined with a power of 200 diameters. The presence of these casts is diagnostic of that form of the disease which this author conceives to be of an inflammatory character, and has denominated desquamative nephritis. On the other hand, he tells us at page 21. of his former paper on the fatty degeneration of the kidney (which change is also productive of albuminous urine) "that most important evidence of the approach and presence of this renal disease may often be derived from a microscopical examination of the urine, in which will be found fat in unusual quantity; partly in the form of free oil globules, and partly contained in epithelial cells, which have escaped from the urinary tubules. Again, an admixture of these two appearances indicates a combination of the two forms of disease.

The search for albumen, or for the morbid matters just spoken of in the urine, should be renewed from time to time, since it is only from their continued appearance that we can infer the existence of structural change in the kidney. If they can be detected only for a short time gradually diminishing in quantity, till they are no longer discovered, we may reasonably consider them as consequences of some one of the many sources of temporary irritation which may have passed away without leaving any permanent injury. We believe, however, that after the long persistence of these evidences of disease a stage may arise in which the albumen disappears altogether, without justifying any favourable inference with regard to the affected organs. The quantity of urine passed in this disease is generally diminished, more especially during its first stage; or when from any accidental cause the kidney may have suffered from the aggravation, or supervention of inflammation. In a chronic state, the quantity of urine may be natural in amount, or even much increased; but these are matters on which it is not easy to form a judgment, since we rarely have an opportunity of watching the disease uninfluenced by medicines. Where the quantity is large, its specific gravity is low, often very much below the healthy standard. One fact that seems well ascertained, is a considerable diminution in the solid contents of this fluid daily excreted. Dr. Christison conceives that the daily discharge of solid matter is often diminished to a fourth, or even a sixth of the daily average; and this decrease he considers to belong to the urea no less than the salts.

When the disease is recent, or has more or less of an acutely inflammatory character, although the specific gravity of the urine is high, yet this is caused in great measure by the large proportion of albumen present, the coagulation of which by heat leaves a fluid whose density is low, showing thus a deficient proportion of its normal solid contents, whilst at the same time the quantity of urine voided is much reduced. Here is a state of things quite adequate to account for the impoverishment of the blood in this form of the malady, by the draining off of one of its ingredients, albumen; and the accumulation in it of salts and urea as a consequence of the insufficient discharge of these through the natural outlet, the kidney.

In the chronic or non-inflammatory stage, or form, this deterioration of the blood is much less marked, if, indeed, it exist at all. It seems admitted now, that, in the progress of the disease, the albumen of the blood may reach, if it do not surpass, the healthy standard; while the presence of urea is not always to be detected.

We find the following description of the successive changes occurring in the blood in Dr. Day's valuable translation of Simon's Chemistry: — 1. There is a decrease in the density of the serum; 2. The density of the serum returns to its normal state, or even exceeds it: sometimes, however, it remains low, even in the advanced stages; 3. The urea disappears as the disease advances, but usually reappears towards the termination of the case, in even a larger amount than previously; 4. The fibrin, which is increased in the first stage, returns to its normal amount as the disease advances, and only becomes considerable again during inflammatory complication; 5. The most remarkable character of the blood in the advanced stage is the great decrease of blood corpuscles, which frequently amount to only one third of the normal proportion.

Dr. Christison, in common with Dr. Bostock, notices a lactescent or turbid state of the serum as occasionally occurring; and the former of these authors obtained from such serum a portion of fatty matter, by means of sulphuric ether; while the latter was unable to prove the presence of oil, though he evidently suspected it. It seems, however, that this appearance is not invariably dependent on the presence of fat; since, in an analysis by Simon, where the serum exhibited a milk-white turbidity, it is expressly stated that this was not caused by fat in a state of suspension, but by numerous minute solid granules, which he concluded to be fibrin.

The condition of the kidney in those who have died while presenting the symptoms of albuminuria, are various, not only according to the different stages, but according to the different intrinsic characters of the diseases by which they have been affected. For it is considered in the present day, that several distinct diseases of the kidney may give rise to the symptoms which constitute albuminuria, or morbus Brightii. This fact was recognised by the first discoverer of the disease, and has been confirmed by subsequent observers.

Dr. Craigie, in his recent work on the Elements of Pathological Anatomy, describes no less than six varieties of change in the appearance and structure of the kidney, as observed in this disease; and we take from him our abridged account of these morbid states.

1. The whole gland is large, flabby, and very vascular: it is soft and flaccid. In colour it may be of a very dark red, or brown

colour, the tubular being of a darker colour than the cortical part; the outer surface of the gland stripped of its tunic is less smooth than natural, and may even be a little rough and irregular.

2. In another variety, the kidneys are large, soft, and flaccid, and when the tunic is stripped, the exterior surface, though less deep in colour than natural, approaching, in fact, to a grey or fawn tint, is still more irregular than in the last-mentioned form: the whole outer surface appears to consist of manifold alternate pits and elevations. These pits contain little clusters of red vessels. Sometimes by the eyes, and always by the microscope, minute grey-coloured bodies, like grains, may be recognised, of lighter colour than the rest, and the same bodies are observed in the cortical portion, on making a section of the organ. These bodies are said to consist of the epithelial cells of the tubuli, infiltrated with fat, and the tubuli themselves infiltrated with albuminous deposit. These changes of the cortical structure may be partial or general. The pits on the surface of the kidney are here darker than the elevations, or intermediate portions; and this appearance has suggested the term mottled kidney.

3. Without increase in size, or change in consistence, the cortical part of the kidney may be penetrated or infiltrated with granular albuminous matter, in various modes and degrees.

In one variety of this form of disease, in an early, though in an incipient stage, when the gland is stripped of its tunic, the surface is irregular, rough, or, as it were, sprinkled with fine sand, of a reddish-grey colour, with more of the former than of the latter; and part of the cortical matter not unusually comes off, adhering to the tunic. The surface presents also small hollows or pits, containing bloodvessels, and numerous minute reddish-grey granules may be recognised, not aggregated together, but separately infiltrated into the cortical matter. A longitudinal section of the gland shows part of the striated texture of the cortical portion in reddish coloured streaks; but all the rest of the cortical part is of reddish-grey colour, lighter than usual, in which small cream-coloured or greyish-coloured bodies may be detected. Such kidneys as these, if changed in consistence, are a little firmer than natural.

In a variety, which is probably a more advanced stage of this last, the outer surface of the gland, if stripped of its capsule, is still more extensively marked with pits, containing clusters of bloodvessels, so that the whole surface is irregular and vascular. Besides these smaller pits and elevations, the whole gland is so changed, as to seem tuberculated or mammillated. The pits not vascular are of a stone-grey, or fawn-colour.

A longitudinal section of such a kidney, exhibits the whole cortical portion as one uniform mass of yellowish-grey, or buff-orange, or sienna-yellow, or cream-yellow, without a trace of striated matter. The tubular cones are also more or less involved in this change. Such kidneys sometimes present a change of shape, being more or less acuminated, instead of rounded at each end.

4. In another variety, the external surface of the kidney is of a slate-grey, or leaden-grey colour, and presents, or may be said to consist of, numerous globular granules aggregated together. In the longitudinal section of the cortical substance, all that is seen is the appearance of a uniform mass of sienna-yellow, without trace of distinct organisation; sometimes minute granular bodies; but scarcely ever any striated texture. The kidneys in this state are almost invariably firm and hard, and are sometimes smaller than usual.

5. In another variety, the kidney, besides being small and firm, is sometimes almost cartilaginous; and presents other morbid changes.

6. In yet other cases, besides the affection of the cortical part, or even independently of this, the tubular cones are very hard, almost cartilaginous, white, or grey-white, or sienna-yellow.

The changes that are observed appear to result either from some form of inflammation in the organs that are the seat of it, or in the deposition of oily or fatty matter, occurring chiefly in the epithelial cells of the cortical portion; or these causes combined in various degrees may be the sources of the mischief.

The existing causes of the disease are very numerous, since not only scarlatina, but other eruptive or continued fevers are said to give rise to it. It has been shown, by experiment on animals, that a congested state of the renal vessels, produced by obstruction of the urine, will cause the appearance of albumen in the urine, as proved by Dr. G. Robinson; while Mr. Simon has shown that the gorging of the kidneys by fat was produced in a cat, which died, after having been kept in a cold, dark cellar, for six weeks. The effects of suppressed perspiration, produced by cold, are also perceived in the altered condition of these organs, and in the modification of their secretions; while intemperance in the use of fermented liquors, and other sources of indigestion, and of a depraved condition of the circulating fluids, are believed to give rise to this disease. Some irritating substances, as cantharides, and oil of turpentine, corrosive sublimate, and probably many others, may produce nephritic affections, marked by the appearance of blood, or serum, in the urine; but we doubt whether, under ordinary circumstances, they ever excite the special malady under discussion.

The treatment of albuminuria must undergo considerable modifications according to the nature of the secondary diseases which arise out of and complicate it. But although medical aid is seldom sought except during the existence, and on account of one or other of its complications, there are some general principles to be laid down with regard to the treatment of the primary disease itself. Now, if we reflect, that the kidneys in this complaint are either suffering from a present inflammation, or congestion, or have suffered structural changes as an effect of inflammation, or congestion, or of a peculiar fatty infiltration, it will appear desirable to abstain from stimulating them in their state of irritation, and to avoid overburthening them at a time when their powers must necessarily be impaired. On these grounds we think that all medicines having a specific diuretic influence, ought as much as possible to be avoided; and that it should be our special object to give relief to the kidney by throwing upon other emunctories, as the skin and bowels, a part of those duties of excretion which it had been wont to perform. Dr. Wells, in the year 1806, suggested the objection that might arise to the employment of diuretics on account of their stimulating the kidneys, and causing them to transmit more serum and red matter of the blood; and although Dr. Blackall made a free use of digitalis, and Dr. Bright employed cream of tartar and other medicines of this class without any apparent inconvenience, yet, with the farther study of the disease, the objection which we have raised has been of late gaining ground. Accordingly, we find Dr. G. O. Rees expressing his conviction, that, as a general rule, diuretics are better avoided, notwithstanding the relief obtained from digitalis in small doses, and combined with squills in relieving symptoms of ischuria and bronchitis in an advanced stage of the disease. The conclusion to which Dr. G. Johnson has been led by his recent and successful investigations into the intimate nature of this disease, is, that in cases of this kind, and more especially perhaps in cases of chronic nephritis, the only safe and useful diuretic is pure water. The results of our own experience are very much in accordance with these views; and we have in numerous instances found an increased and improved secretion from the kidneys follow the use of aperient and diaphoretic means such as at an earlier period of our practice we had in vain solicited by means of diuretics.

Abstinence from the employment of these medicines is a principle to be observed in our general plan of treatment, and one from which even the presence of dropsy will not make it necessary, to depart. Any symptoms of present inflammatory action in the kidney must be met by local depletion by means of cupping or leeches to the loins, or in a less acute stage by counter-irritants. Beyond this it will be desirable that the bowels and skin be made to act freely; the first by means of brisk purgatives, the latter by regulated temperature, by the warm bath, and by antimonial and other diaphoretic medicines. As purgatives we have been accustomed to employ either the compound jalap powder, or an analogous one in which scammony is used instead of jalap. Thus a scruple of scammony, with half a drachm of cream of tartar, and three or four grains of ginger, may be given to an adult on alternate mornings where dropsical symptoms are present. We habitually avoid mercurial purgatives in these cases, on account of the facility with which patients suffering from albuminuria, become affected with mercury; and from an impression (we do not say an established conviction) that such mercurial action is rather hurtful than otherwise. The purgatives selected should be such as depurate without impoverishing the blood; and we know none better than those just pointed out, which are much to be preferred to common saline aperients. Of diaphoretic medicines to be used in this disease, antimony, in the form of tartar emetic, deserves the first place, and may be given in doses varying from one sixteenth to one eighth of a grain, or even more, in conjunction with acetate of ammonia. The mixture of opium and ipecacuanha, as it exists in Dover's powder, is also found of use. There is one observation which we think it worth while to record in reference to the treatment of this disease, that, although a troublesome diarrhœa, and a far more intractable irritability of stomach, giving rise to most obstinate vomiting, are its frequent accompaniments, yet, in the numerous examples we have witnessed, it has not occurred to us to remark that the free use of purgatives in any degree tended to promote the supervention of that diarrhœa, or that nauseating medicines, as antimony, at all increased the liability to that kind of vomiting. The same remark applies also to the use of opium, which is not apt to superinduce that state of coma often arising, as it were, spontaneously in this malady. We may, therefore, without fear, resort to purgatives, antimony, and opium, since though they severally produce symptoms like those arising in this disease, yet they do not appear to excite, or bring into activity, the peculiar condition upon which those symptoms depend, when occurring spontaneously during its progress. The measures just indicated are appropriate to the earlier or more inflammatory phases of this complaint at whatever period they may show themselves; and, indeed, a free action of the bowels and a healthy condition of the skin should at all times be objects of attention. Nevertheless, there are other remedies of a tonic and somewhat astringent nature, which, in chronic cases, may often be advantageously employed. Among these the preparations of iron hold the first rank; as the compound steel mixture, and the iodide, and lactate of iron, the ammonio-tartrate, or the ammonio-citrate of that metal, or the citrate of iron and quinine. The sulphate of iron is still more powerful than any of the preceding, and may be resorted to whenever our progress encourages us to push these remedies to their utmost extent. It is beneficial to make occasional changes, by altering the form of the medicine, even when we pursue the same indication as before. All the above seem to possess the power of restoring the natural colour to the complexion, by improving the condition of the blood, and often simultaneously, or as a consequence of this, the secretions of the kidney are found to be improved: the albumen decreasing in amount, or disappearing altogether. With the same view the vegetable tonics — as bark, and uva ursi, have often been administered, the former being a favourite remedy of Dr. Blackall in those cases where the dropsy had disappeared under the use of digitalis; the latter having been frequently employed to confirm convalescence by Dr. Bright. A scruple of the powder of uva ursi, with three grains of powdered leaves of conium, was the combination ordered by the latter physician. The benzoate of ammonia has been commended by one eminent physician, Dr. Seymour, for its power in diminishing the excretion of albumen; but, after having made and witnessed trials of this medicine, we have not obtained any satisfactory evidence of its efficacy.

The dietary of the patient must at each period be such as is consistent with the other treatment, fermented liquors being allowed at any time very sparingly, if they be allowed at all. During the existence of inflammatory complication, or of inflammation in the kidney itself, his food must be chiefly vegetable, with the addition of weak broths: yet his debilitated condition must be borne in mind, so as to prevent our carrying the lowering system too far. Where the kidney alone is thus affected, it will be well to trust for its relief to local bleeding, or counter-irritation, with diaphoretics and aperients; while the general power is supported by a moderately liberal diet. The law of nature which requires new materials to supply the waste of the human body is not abrogated because inflammation exists; and in many cases where this arises (in all, probably, in which it arises in a debilitated subject), we shall succeed better by a more free use of antiphlogistic means, such as purgatives, and antimony combined with a less rigid dietary than on the opposite plan, in which, if medicine is given more sparingly, food, too, is given with a grudging hand. It should be remarked, that the principle we advocate is especially worthy of attention in all those diseases like the present, which have been termed blood diseases, and depend upon a vitiated condition of that fluid. By withholding food we may reduce inflammation; but we withhold also the means of correcting this defect. We do not urge this consideration as one which is to supersede every other, but we think that it should never be lost sight of in our plan of treatment.

Of the secondary diseases which arise in albuminuria, dropsy is by far the most frequent, and this for the most part in the form of anasarca. It is apt, also, to occur under two aspects, in one of which there is less pallid discolouration of the skin, often a degree of injection of the cutaneous vessels producing a superficial blush: there is less tendency to gravitation of the effused fluid, and instead of the parts affected having a doughy feel, and pitting readily upon pressure, there is an elasticity on the surface, which prevents any indentation. This is the more inflammatory form. In that which is comparatively adynamic the reverse of all this obtains. A depleting plan, often including moderate bloodletting, is more appropriate to the first; a more tonic system to the second form; while advantage will be derived from a free use of purgatives in both. The threatening of apoplexy, or its actual occurrence, is perhaps the next secondary affection in order of frequency in those labouring under Bright's disease; and this may occur, as we have ourselves in one case witnessed, independently of any previous or present dropsical effusions. It has, however, appeared to us particularly apt to arise after the recent removal or disappearance of these swellings, so that it is especially incumbent on the medical attendant to watch at this period for any symptoms of cerebral disturbance which may present themselves. Cases have even occurred in which so sudden a diminution of the anasarca has been observed upon the occurrence of apoplexy as would, if it were possible, justify a suspicion that the effused serum had left the limbs to be again poured out within the skull. It is to be remarked, however, that the form of apoplexy is not necessarily that which has been called serous, it may be, and often is sanguineous, of which fact an example will be found in the first volumes of Dr. Bright's Reports. We are not aware that any peculiar plan of treatment is demanded to obviate, or, if possible, to relieve, the disease when arising under these circumstances. Local bloodletting, counter-irritation, and strong purgatives will here, as in other instances, be of most avail, while special attention should be directed to the kidneys, with a view of restoring their secretions, if these appear either greatly diminished or suppressed. Yet this indication should be pursued not by diuretics so much as by measures suited to relieve an inflammatory or congested condition in these organs. If any direct diuretic be thought indispensable, digitalis is the one which we should prefer, and this should be given in combination with antimonials.

The diarrhœa sometimes arising in the course of albuminuria has not seemed to us a very untractable disease, but has readily yielded to chalk mixture, to astringents, or to opium. At times, however, we have known it to alternate with vomiting, and then it has been advisable only to moderate, but not to stop, a malady which constituted the less evil of the two.

Vomiting, of a most obstinate and unmanageable kind, is a more common attendant on Bright's disease than relaxation of the bowels; and we must avow that, when it has assumed a decided character, it has baffled all our efforts, continuing unabated for days and weeks, till it gave way to a gradually increasing stupor, which has ushered in death. We have made trial of cupping on the loins, with the view of altering the condition of the kidneys, upon which it might depend: we have employed warm bathing, in order to secure a healthy action of the skin: we have used counter-irritation to the stomach, and other means addressed to that organ; calomel, in alterative doses, with or without opium; the alkaline earths, — magnesia, chalk, lime water; effervescing draughts,—brandy, laudanum, hydrocyanic acid, creosote, alone or variously combined; oxyde and nitrate of silver, bismuth, a grain of strychnia dissolved in eight ounces of cinnamon water, by means of a few drops of acetic acid, of which one-sixteenth was given repeatedly: but we have nothing but failure to record. Recourse to the administration of minute quantities of bland fluids—of milk, of broth, of beef tea—

has produced no better results; the distressing retchings or vomitings have not been thereby allayed; all means, all precautions, have seemed powerless, even for the mitigation of suffering.

For the bronchitic, or catarrhal, affection, often present together with albuminous urine, we have no especial treatment to lay down, except that here, as in other secondary disorders, we should avoid such expectorants as have diuretic properties, and rely upon antimonials, ipecacuan, and the like, with demulcents in the inflammatory stage, stimulants, as the mistura ferri composita, ammonia, senega, in the chronic. The co-existence of dropsy in the majority of cases, and sometimes of œdema of the lungs, as well as the condition of the kidney, makes the simultaneous use of purgatives beneficial. It has often occurred to us to doubt whether these pulmonary affections are not coincident effects of a common cause acting at the same time on the kidney, rather than secondary consequences of the renal disease.

The inflammatory diseases of serous membranes wont to arise are especially those of the pericardium, or external membrane of the heart, of the endocardium or its lining membrane, of the pleura, and occasionally, but very rarely, of the peritoneum; in all of which antiphlogistic remedies must be resorted to, together with bloodletting, either local or general, but somewhat more cautiously and sparingly than when the same complaints are independent of, or unaccompanied by, the diseased condition of the kidney. Mercury, also, pushed to salivation may be demanded by the urgent nature of the case, even though it act prejudicially, of which there is room for doubt, upon the primary disease.

We have seen iritis in one instance, in which it supervened upon albuminuria, in a patient, at the time suffering from salivation, completely cured by moderate leeching and blisterings; while bark was given internally: perhaps similar means might be of avail in inflammatory œdema of the epiglottis, or glottis, as the former occurred in a case published by Dr. Bright. Here, also, tracheotomy might be practised for averting impending suffocation.

Where deposits of fatty matter and cholesterine, as described by Mr. Gulliver, take place in the coats of the arteries, in connection with a general tendency to fatty degeneration, which may affect the kidneys, as well as the liver and other organs, and so be associated with albuminuria, we have an associated disease, for which the science of medicine has hitherto discovered no preventive, no remedy, and no palliative. We should seek them; but we know not how far we can secure them by temperate living, by fresh air, and free exercise,—the general means of preserving sound health, and of warding off the fearful disease which we have been just describing.

CYSTITIS, OR INFLAMMATION OF THE BLADDER.

Tension and pain over the pubes, with a frequent desire of making water, difficulty in voiding it, or a total retention, together with tenesmus and pyrexia, mark this disease.

Cystitis, — that is, acute inflammation of the bladder, as distinguished from catarrhus vesicæ, its chronic form, — is a rare disease. It is said to be induced by direct injuries; as by wounds, contusions, severe exercise on horseback, the incautious introduction into the bladder of bougies or catheters; the presence of calculi; mechanical obstructions to the discharge of the urine, as strictures of the urethra, enlargement of the prostate gland; or calculi lodged in the neck of the bladder. It sometimes, also, results from the metastasis of gonorrhœal inflammation. All these causes, however, are far more prone to produce a subacute or chronic form of the disease.

The treatment consists in local blood-letting, by the application of leeches to the hypogastrium and pericardium, hip-baths and fomentations to the region of the bladder; the prevention of costiveness of the bowels by gentle laxatives, such as castor oil, magnesia and rhubarb; or magnesia and sulphur, to the extent of ten or fifteen grains of each of these last in gum water, twice or three times a day. Or, instead of any of these, enemata of warm water, or of oil and gruel, may be employed daily for this purpose. Anodynes, as Dover's powder, given to the extent of ten grains at bedtime, or in smaller and more frequent doses during the day, are of service. Hyoscyamus may be used instead, wherever we can be assured that its preparations are not inert, either from error in preparation, or subsequent spoiling. Five grains of the extract may then be ordered in mucilage, with from twenty to thirty drops of liquor potassæ. We think this last medicine entitled to a trial, from its well-known power of diminishing the acrid character of the urinary secretion, so as to abate one source of continued irritation. It is now ascertained that, although the mucus secreted on the inner surface of the bladder is always alkaline, and may be so increased in amount as not only to occasion the deposit of phosphatic concretions in immediate contact with it, but to give an alkaline character to the whole of the urine when voided, yet, nevertheless, the use of liquor potassæ and other alkalies — as lime water — is often effectual in relieving this state of things. Under an alkaline treatment mucus has been found to decrease in quantity, the phosphatic deposits to disappear, and the urine, from being alkaline, to become acid, as in its natural condition. This apparent paradox is explained by Dr. Rees in the following way. He conceives that the urine, as secreted by the kidney, is acid, as in health, and that, acting on irritable mucous surfaces in the ureters and bladder, it causes a secretion of mucus, having alkaline properties in such quantity as is more than sufficient to neutralise the original acidity of the urine. If, then, the original acidity of the urine be partially neutralised by alkaline remedies given by the mouth, its acrimony is thereby diminished, and, ceasing to produce irritation in the mucous membranes, it escapes those further changes which the mucous secretions had before effected in it. In cases of inflammation of the bladder, therefore, it must be our object to diminish acrimony of the urine, both by the use of diluents and alkalies; care being taken, however, that the latter remedies are not employed in excess, either as regards the amount or continuance of the doses.

In all cases of Cystitis, the removal or avoidance of its exciting causes will be one aim of treatment; and with this view, the extraction of stone or the dilatation of stricture may be demanded; but these objects will be most successfully attempted when existing inflammation has, as far as possible, been subdued or assuaged.

Sir B. Brodie, after directing bloodletting from the arm, or from the loins by cupping, or from the lower part of the abdomen by leeches; the confinement of the patient to bed, and to the horizontal posture; the regulation of the bowels by castor oil, and the administration of opium, especially by clysters, as means of general efficacy; mentions, as the result of his experience, that where the urine retains its acid property,—as shown by its reddening litmus paper,—and where, at the same time, the sediment which it deposits has no adhesive quality, but some resemblance to pus, under such circumstances as these, much benefit will arise from two grains of calomel with half a grain of opium, given twice or three times daily. Where, on the contrary, the urine is alkaline, restoring the colour of reddened litmus paper, and depositing a small quantity of adhesive mucus of a brownish character, much good has arisen from fifteen or twenty minims of the vinum colchici, given three times a day, for three or four successive days. In cases of gonorrhœa the symptoms do not usually subside until the purulent discharge from the urethra is restored.

We very much doubt whether the disease which we have been describing above requires a separate notice from that of the more chronic form, presently to be spoken of as catarrhus vesicæ. Sir B. Brodie says of the former, that, in acute inflammation of the bladder, it is of much less common occurrence than nosological writers would lead us to suppose. He adds, that cases of retention of urine and cases of inflammation of the prostate gland are not unfrequently mistaken for it. What seems yet more extraordinary is, that Dr. Prout should refer to this head those cases of diffuse inflammation around the bladder which originate in the infiltration of urine after the operation for stone.

We do not altogether deny the existence of acute cystisis, but conceive that, like gastritis, and some other maladies, it should be considered a disease of account, often spoken of when a nosological scheme is to be made up, but of which, nevertheless, few actual specimens can be exhibited.

PHLEBITIS, OR INFLAMMATION OF THE VEINS.

We designedly omit all mention of Arteritis, or inflammatory affections of the arteries, in the belief that, if of occasional, they are nevertheless of rare occurrence, not recognizable during life by any certain symptoms, and that our knowledge of their causes and consequences is exceedingly imperfect and uncertain.

The same remark is by no means applicable to Phlebitis, or inflammation of the veins, a subject which has engaged attention for many years past; and so long ago as 1828 received much elucidation from the pen of Mr. James Arnott, in his paper on the Secondary Effects of Inflammation of the Veins, published in the 15th volume of the Medico-Chirurgical Transactions.

For the better understanding of this disease, it will be convenient to regard it in its different stages or aspects; first, as a local and more or less circumscribed affection; and, secondly, in its consequences or sequelæ, in which any part or organ of the body, however remote, and almost any tissue, however various, may be implicated. To the former part of the subject, the term phlebitis is more strictly applicable; while the latter has been treated of under different denominations,—as secondary effects of phlebitis, purulent deposits, or purulent infection. Of these latter expressions we would remark that they are not equivalent in meaning, since purulent deposits, though forming a large proportion of them, are not the only secondary effects of phlebitis, and may, besides, arise independently of that disease; while the general infection of the system, whether resulting from phlebitis or not, is not constantly and necessarily brought about through the agency of pus.

We have spoken above of two stages of phlebitis, without however intending to imply that these are to be recognized in every case. Happily, in not a few, the resources either of nature or of art are adequate for the prevention of those terrible sequelæ which not unfrequently arise.

It seems more extraordinary that cases should occur exhibiting most exactly the terrible symptoms which are wont to follow phlebitis, in which the existence of a primary phlebitis has not been manifested during life; nay, sometimes, has not either been made apparent by dissection after death. As this anomalous fact may seem to require confirmation, it may be stated that it is distinctly admitted by Dr. Watson; while Dr. Hasse writes that there are cases in which distinct venous inflammation cannot be detected in the dead body. But even then, he goes on to say, the course and symptoms of the disease, as well as the appearances after death, furnish us with ample evidence of contamination of the blood with pus: we must therefore take it for granted, that either the phlebitis had escaped discovery, or else that pus had at once passed by absorption into the blood without any previous phlebitis. Still, he continues, after enumerating the numerous hindrances to the discovery of an actually existing phlebitis, the other supposition cannot be regarded as wholly untenable, although the absorption of unaltered pus through the capillaries is hardly admissible on physical grounds.* But we may ask, may not pus itself find admission into veins which have been divided by operation or accident, more especially when their canals are kept open in consequence of the peculiar conditions attending their distribution through bone? May not, again, other noxious fluids — as sanies — of more ready absorption than pus, when admitted into the blood, produce all the evil consequences attributed to the introduction of this last? We cannot close this digression without quoting from Mr. H. Lee — the most recent writer on phlebitis and purulent deposits — the sentiments which he entertains on the questions involved in it. "What the symptoms are which characterize the presence of pus as distinguished from other secretions in the blood, it would probably be difficult to determine in cases as they occur in practice. . . . . . . The conclusions drawn from the different facts now stated are, first, that inflammation of a vein or phlebitis is no essential part of the primary affection which precedes constitutional symptoms, even when morbid matter has found its way into the circulation through a vein; secondly, that when inflammation of a vein does occur, in some instances, at least, it is not the cause, but the consequence, of the introduction of diseased or foreign matter into the blood; thirdly, that, although veins are with difficulty inflamed by any mechanical injury, they are susceptible of rapid inflammation, accompanied with constitutional disorder, whenever any irritating fluids are introduced into their cavities.†

The local phenomena, writes Dr. Watson, when a superficial vein of some magnitude is inflamed, are pain and tenderness in the course of the vessel, which, in the adhesive variety of the complaint, is soon converted into a tangible, hard, and sensitive cord. Whether the vein be near the surface, or deeply seated, there is usually more or less œdema of the areolar tissue of the part. Phlebitis of this kind has sometimes been confounded with inflammation of the lymphatic absorbent vessels. You distinguish the latter by the slenderness of the painful cord; by its position, which is still more superficial than that of a subcutaneous vein; by the number of little knots which diversify its course, and by the streaks and patches of bright inflammatory redness which appear along the same track. Dr. Graves remarks, that inflammation of the lymphatics "is seldom continuous, but is developed at certain isolated points." Velpeau has laid down the following distinction between the two: — "Inflammation of the lymphatics is seen but not felt, while phlebitis is felt rather than seen."‡

This adhesive form of phlebitis, says the same author, is a local disease. Whatever ill effects it may produce are purely mechanical, and depend upon the closure of the canal. If the organ mechanically affected by it be not a vital organ; if the system can await the development of a collateral venous circulation; all at length may end well. Sometimes, indeed, as the inflammation gradually subsides, the coagulum is softened and gradually reabsorbed; the blood drills a passage for itself through the centre of the plug, and the circulation is restored through its accustomed channels.

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* Hasse, p. 21.

† On Inflammation of the Veins, &c. by H. Lee, F.R.C.S. 1850, p. 11.

‡ Watson's Lectures, 1848, p. 323.

This is fortunately the commoner form of phlebitis; but sometimes the inflammation advances beyond the adhesive and into the suppurative stage. Even then the disease may remain a local one. The adhesive process may bound and isolate the suppurative in both directions; and an abscess in the part is then the usual result.* This isolation is termed by Cruvelhier the sequestration of veins.

In describing the first stage of phlebitis as a local disease, it is by no means our purpose to imply that the veins, it may be of a whole limb, can become suddenly obstructed—as in phlegmasia dolens—so as to give rise to great swelling and painful distension, without producing some sympathetic constitutional disturbance. Nevertheless the perusal of actual cases of obstructive phlebitis shows that disturbance to be less perilous to life, and much less than might be anticipated, provided only that the functions of no vital organ are impeded. Thus Dr. White has furnished to the Newcastle and Gateshead Pathological Society the account of a man who was siezed with an attack of phlebitis, affecting the veins of the right thigh, extending also into the pelvis and into the left leg, causing extreme distension of both lower extremities, as well as œdema of the lower part of the abdominal walls and integuments of the loins, in whom the pyrexia yielded to general and local bloodletting, and the employment of saline purgatives and large doses of calomel, and who was still alive at an interval of three years from this attack. The subsequent establishment of a collateral venous circulation communicating with the thoracic veins proved at once how extensive was the disease, and how wonderful, though imperfect, the recovery.† To the same purport Mr. Lee writes, that when pus or other diseased fluid is confined to the cavity of a vein the constitutional symptoms produced are comparatively mild, as long as it remains limited and circumscribed by adherent coagula; that is to say, so as to be excluded from the rest of the circulating system.‡

The case is far otherwise where the venous system of an organ immediately essential to life becomes involved in this disease, however induced; that is, whether primary or secondary in its character. Thus, Dr. Hasse says that in inflammation of the sinuses of the dura mater, which closely resembles ordinary phlebitis, death ensues very speedily amid the phenomena of functional disturbance of the brain; considerable quantities of serous fluid being found beneath the arachnoid and in the ventricles; the adjunct cerebral substance softened; and the whole encephalic mass gorged with blood.[*]

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* Watson's Lectures, pp. 317, 318.

† Med. Gaz. vol. xlvii. pp. 610, 611.

‡ Lee on Phlebitis, p. 15.

Very different, but not less alarming, because scarcely if at all less fatal, are the so-called secondary effects of phlebitis, when pus, or other noxious liquid, or loose coagula themselves have been carried on in the current of the circulation; having been either not at all, or but imperfectly, arrested in the place of their first reception or formation; or having been, as we may suppose in other cases, too soon liberated from detention by beneficent but ill matured efforts of nature for the restoration of the obstructed veins to their proper uses. When venous sequestration, says Dr. Hasse, does not take place, or but imperfectly, and the pus, or the softened fibrin, passes at once into the general circulation, all those phenomena ensue which, assuming first the type of an irregular intermittent, and subsequently a typhoid or putrid character, appeared so enigmatical to our forefathers.[†]

We borrow from Mr. Arnott his fuller description of this terrible malady, the many-headed issue of a parentage often obscure, or little suspected of teeming with so monstrous a birth.

"The secondary affection in phlebitis usually shows itself in from two to ten or twelve days after the receipt of the injury which has occasioned the inflammation in the vein; when the vessel has been previously diseased, sometimes sooner. The symptoms may be thus briefly characterized: —

"Great restlessness and anxiety, prostration of strength and depression of spirits, sense of weight at the præcordia, frequent sighing, or rather moaning, with paroxyms of oppressed and worried breathing, the patient at the same time being unable to refer his sufferings to any specific source. The common symptoms of fever are present; the pulse is rapid, reaching sometimes to 130 or 140 in a minute, but is in other respects variable. There is often sickness and violent vomiting, especially of bilious matter. Frequent and severe rigors almost invariably occur, sometimes to the number of three or four in the course of a few hours. The general irritability and deep anxiety of countenance increase, the manner is quick, and the look occasionally wild and distracted. When left to himself the patient is apt to mutter incoherently, but on being directly addressed, is found clear and collected. The features are pinched, and the skin of the whole body becomes of a sallow or even yellow colour.

"Under symptoms of increasing debility, and at a time when the local affection may appear to be in great degree subsiding, secondary inflammations of violent character, and quickly terminating in effusion of pus or lymph, very frequently take place in situations remote from the original injury; the cellular substance, the joints and the eye have been affected; but it is more particularly under a rapidly developed attack of inflammation of the viscera of the chest that the fatal issue usually occurs. Whether this is observed or not, death is always preceded by symptoms of extreme exhaustion, — such as those of a rapid feeble pulse, dry, brown, or black tongue, teeth, and lips, covered with sordes, haggard countenance, low delirium, &c." *

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[*] Hasse's Anatomical Description, &c. by Swaine, p. 31.

[†] Ibid. p. 18.

We find in Mr. H. Lee's more recent work a statement apparently at variance with one of those cited just above, where he says that, at the time of the occurrence of the general disturbance of the system, the local injury or wound will generally put on an unhealthy appearance; that the skin in the immediate neighbourhood will sometimes assume a dull brownish red appearance; that the wound, where there is one, will become dry and glazed, and that an erysipelatous blush of indefinite extent will spread towards the centre of the circulation.† Now we apprehend that these seemingly inconsistent statements may be reconciled by supposing that Mr. Lee applies more especially to cases occurring in debilitated subjects in whom there has been little or no effort at venous sequestration, so that the local or primary, and the constitutional or secondary mischiefs have arisen almost simultaneously; while Mr. Arnott's is true of those more especially in which sequestration has duly taken place, and noxious matters have found their way into the system as the result of a premature or undue resolution of the detaining coagula.

In other respects, the description of the more modern writer confirms, while it adds but little to, that of his predecessor. Of the dusky yellow hue frequently pervading the skin, and sometimes the conjunctivæ of the eyes, we are told that it may or may not depend upon an accompanying affection of the liver. Vomiting, again, it is said may occur, either as a symptom of constitutional disturbance or as indicative of inflammation of an abdominal organ, and in the latter case is extremely obstinate. Diarrhœa, it is important to remember, is a symptom of frequent occurrence, and not unfrequently accompanied by relief of the other symptoms; when it occurs, it is generally profuse, and little under the control of medicine; but if checked, may be followed by a sudden change for the worse, in the condition of the patient.‡

Mr. Arnott has noted the duration of seventeen cases adduced by him from the receipt of the injury occasioning the phlebitis to the fatal termination. The most speedy death it appears occurred on the fourth day; the latest on the forty-ninth. Between these limits they are very irregularly distributed; eleven of the seventeen, however, falling within three weeks.

The prognosis in cases of primary phlebitis will generally be favourable in proportion to the chance of the disease continuing only a local affection; while this chance will be greater in patients enjoying previously unbroken health, than in such as labour under original feebleness of constitution, or have suffered under the effects

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* Medico-Chirurg. Trans. xv. pp. 51, 52, 53. Lee, p. 49.

† Lee on Phlebitis, &c. 49.

‡ Ibid. 50, 51.

of previous intemperance, or of lingering disease. The prognosis, when symptoms of general infection have set in, must be always unfavourable, and for the most part absolutely hopeless.

We do not include either coagulation of the blood in the pulmonary arteries on the formation of what are termed polypi cordis among the secondary effects of phlebitis, although both of them are placed in this category by Dr. Hasse. But with regard to the first of these diseases, we find no such cause assigned by Mr. Paget as probably operative in any of the cases which he has discussed; while with regard to neither of them is any argument adduced in support of the imputed origin. We scarcely know what weight to attach to Mr. H. Lee's description of "diseased coagula presenting a mottled appearance, and so forth, found entangled among the projecting fibres of the auricles and ventricles"* as given in the more theoretical part of his Essay, seeing that he makes no mention of any such phenomenon among the many post-mortem appearances observed in those who die in consequence of the introduction of vitiated fluids into the blood.†

In speaking of the post-mortem appearances observed in cases of phlebitis, and in those exhibiting its secondary effects, or those of infection of the blood, we must remark that there are no doubt two principles in operation in bringing about the changes which take place within the veins. Moreover, we have two authors of repute as the respective advocates of these two principles. The one, Dr. Hasse, having cited an experiment of M. Gendrin's, showing that an irritating injection thrown into a vessel kept empty of blood, caused a plastic substance to be deposited within it, assigns the chief influence to the operation of inflammation within the vein; but states, nevertheless, that it is natural to infer that in vessels containing blood the plastic product partly exudes from the parietes of the vessels, and is partly deposited from the blood.‡ Mr. H. Lee, on the other hand, having performed and adduced experiments in proof of the power of pus and of other morbid fluids to produce coagulation of the blood is naturally anxious to turn these results to account, and gives to this acquired tendency to coagulation a primary, but not an exclusive, importance. In noting the post-mortem appearances we must bear in mind the same distinction between the primary and secondary affections which we have insisted upon and kept in view all along.

Mr. Arnott, in investigating the nature of the connexion between the primary and secondary affections in this disease, sets out by refuting a rather hastily adopted opinion, that the latter were due to the spreading of the inflammation to the heart, and shows that there are considerable differences in the extent of vein occupied by inflammation in fatal cases of phlebitis. Sometimes the disease has spread into several or most of the veins of a limb from that primarily affected; at others it has not proceeded beyond the vessel in which it originally appeared. This last circumstance, with that of the fatal consequences sometimes ensuing from inflammation, limited to a few inches only of vein, justifies the inference that the dangerous consequences from phlebitis bear no direct relation to the extent of the vein which is inflamed.*

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* See on Phlebitis, &c. p. 59. † Ibid. pp. 51—56 ‡ Hasse, libr. cit. p. 13.

This author dwells upon a fact, regarding the point at which the inflammatory changes in the coats of the veins usually terminate, not adverted to by previous authors, but admitted by the most recent, as by Mr. Lee. "According to my observation," he writes, "these changes are limited by the passage of a current of blood; where a trunk is concerned, the boundary being the entrance of a branch; and where a branch is concerned, the boundary being the junction of this with a trunk."† The whole theory of the production of the secondary mischiefs in phlebitis is much elucidated and almost explained by the following account of the examination of the body of a man in whom there had been inflammation of the right femoral vein, and of the branches contributing to form it, with the diseased changes extending along the external iliac vein to the entrance of the internal iliac. Here, however, the great thickening of the coats, and the presence of matter (resembling a mixture of lymph, pus, and blood) in its cavity, suddenly ceased; the coats and inner surface of the common iliac vein, together with those of the internal, being perfectly natural in appearance. No impediment existed to the entrance of the morbid contents of the diseased portion of vein into the healthy; and as these presented themselves to the action of the current of blood passing from the internal into the common iliac, they must have been swept onwards by it to the heart.‡ In the details of the post-mortem appearances of seventeen cases of phlebitis, following either venesection or the division of a vein, we meet with descriptions of the vessels primarily affected very similar to that contained in the above sketch; thus the vein itself is found thickened, or again thickened, indurated, and red: again, in one example, the vein which had been punctured was itself thickened, and its cavity obliterated, while the adjacent continuous veins were enlarged, thickened, and indurated; and again, in another case, the coats of the vessels were red, and the surrounding tissue was indurated by inflammation. In one rather protracted case two small veins were impervious to blood, and reduced to a cord-like substance. On pursuing an inquiry into the contents of the inflamed vessels, it is found that in a number of them, where an open wound existed in the vein, pus was discharged from it during life; whilst, in fourteen cases out of seventeen, pus, or pus in conjunction with lymph, was present in the vessel after death. In two instances no mention is made of pus, the contents being described in one as adhesive matter, in the other as flakes of lymph, while in one case only neither pus nor lymph was found in the vessel. These observations suggested to Mr. Arnott's mind the conclusion now generally adopted, that the passage of pus into the circulation is probably the principal, yet that circumstances do not justify us in regarding it as the sole, cause of the secondary affection; indeed, he conceives that this property must be attributed to inflammatory secretions generally from the vein, although not purulent.*

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* Medico-Chir. Trans. xv. p. 44.

† Ibid. p. 47.

‡ Ibid. p. 49.

Such we believe to be a faithful and pretty complete account of the changes due to the primary disease met with after death, in cases fatal in consequence of secondary mischiefs, and in which the primary affections of the veins are well marked. Where no secondary affection has supervened, probably in consequence of the primary inflammation having been more completely of an adhesive or plastic character, the veins may be found after death, from some other cause, more or less completely obstructed or obliterated. In such a case of phlegmasia dolens Dr. R. Lee found the common iliac with its subdivisions, and the upper part of the femoral veins on the left side, so resembling a ligamentous cord, that on opening the sheath the vessel was not, until dissected out, distinguishable from the cellular substance surrounding it. On laying open the middle portion of the vein, a firm thin layer of ash-coloured lymph was found in some places adhering close to and uniting its sides, and in others clogging it up but not distending it. The portion of the vein above Poupart's ligament became gradually smaller, and no traces of its entrance into the vena cava were discernible.† Yet other cases seem to show that after primary phlebitis, very similar in kind and equal in severity, the veins may again become pervious, and recover entirely, or almost entirely, their healthy functions, if not their natural structure.

But again the phlebitic appearances above described are not such as constantly, perhaps not such as even commonly, precede those fearful constitutional symptoms which are viewed as secondary effects of inflammation of the veins. It will be seen, by reference to our article on Hepatitis, that in tropical climates the formation of abscesses in the liver, as a consequence of dysentery, has a considerable amount of evidence in its support; while the production of the purulent collections in that case was attributed to the veins rather as conveyors of some deleterious principle, whether pus or sanies, from the diseased surface of the intestine, than as primary sources of the more remote injury through inflammatory actions within their own cavities. That the noxious principle by which the blood becomes infected may originate in inflammatory action within the veins, we must at once admit when we read of instances such as those spoken of and adduced by Dr. Watson, in which there existed no known source of contamination external to the vessels, the only exciting cause of the disease being exposure to cold giving rise in the first instance to distinct phlebitis, and subsequently to most severe and fatal diffused mischief. But Mr. Lee's reasonings have convinced us that phlebitis is neither a constant nor a necessary precursor of such infection; and, while he assigns a different and external origin for the malady, seems to account for the occasional small amount of discoverable local mischief.

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* Medico-Chir. Trans. xv. p. 45, 46.

† Ibid. p. 137.

His theory of infection of the blood appears, indeed, to explain consistently the varied aspects of cases occurring in actual practice. It has been shown, he says, in the previous sections, that secretions mixed with the blood will alter its properties, and influence the period of its coagulation; that when the blood is thus altered, it may pass through a vessel without leaving any trace of its passage; but that, if it coagulates and remains in a vein, the coats of the vessel will then take on increased action. The exciting cause of the inflammation in such cases appears to be conveyed by means of the contents of the vessels to the vessels themselves. But as in post-mortem examinations the changes produced in the vessels are much more easily recognised than the alterations in their contents, the former have of late years almost exclusively occupied the attention of pathologists.

The cases in which constitutional symptoms follow inflammation of the veins, will be found to divide themselves principally into three large classes. 1. Those in which one of the larger veins has been opened. 2. Those in which some portion of bone has been involved in the original lesion. 3. Those that occur after child-birth.

In each of these three classes of cases, a free communication will be found to exist between the injured part and the general circulation. The natural mode of sealing this communication, is the coagulation of the blood in the veins of the injured part. When from some constitutional affection, or from some local peculiarity of structure, this intention is not fulfilled, a ready passage remains open through which the blood may become infected. When pus has been injected into the veins, it has frequently happened that no great constitutional disturbance and no signs of secondary inflammation have been produced; but this, it is believed, has depended upon the coagula in the veins having prevented the foreign matter from finding its way along the vessels. But if this obstruction be not offered, or be overcome, then the appearance of secondary inflammation, accompanied by corresponding constitutional symptoms, will be produced.* If it be asked why, in cases of actual occurrence, the natural protection just spoken of is either wanting altogether, or ineffectual, we are told farther on, that, from the consideration of facts and of experiments (which our space precludes our detailing), it becomes evident, that the introduction of pus into the system, through an injured or inflamed vein, can rarely be the first step towards purulent infection of the system. Some change must previously have passed in the blood, by which its coagulating power is impaired, or some unusual mechanical means must have been employed, before the pus can find its way into the course of the circulation.*

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* Lee on Phlebitis, &c. pp. 17, 18.

It is easy to understand that the imperfection of the protective clot may be caused mechanically, by its being broken up where the vessel which contains it joins another of greater magnitude, and has its orifice bathed in the continuous stream of blood.† Nor is it difficult to comprehend that the shrinking of coagula, designed by nature for the restoration of the functions of the vein, should, if their composition have been chemically imperfect, be attended with the peril of producing constitutional infection.‡ Again, regarding the phlebitic inflammation in the most marked examples of its occurrence as only incidental to the natural means whereby a morbid poison, whether received from without or generated within the vessels, is imprisoned and detained, we shall be able readily to account for the existence in practice of cases of constitutional infection, in which slight or no traces can be found of a co-existing or preceding phlebitis §

The morbid appearances belonging to the secondary affection of phlebitis are, according to Mr. Arnott:—

In the chest: effusions of sero-purulent fluid into the cavities of the pleuræ and pericardium; exudation of coagulable lymph on the surfaces of the heart and lungs; hepatisation of the latter organ; the infiltration of pus into its tissue; or small collections, like a mixture of pus and lymph.

In the cellular substance, intermuscular as well as subcutaneous: pus and sero-purulent fluid has been extensively deposited, sometimes in collections like abscesses; at others, appearing more like an effusion into its cells than as resulting from the common process of inflammation. These collections most frequently occur in the vicinity of the joints. Sometimes pus is deposited under the skin of the opposite fore-arm, near the wrist; sometimes with inflammation of the knee-joint into the intermuscular cellular substance of the corresponding thigh; sometimes into that of the opposite leg and both fore-arms; sometimes into the interfibrillar cellular tissue of the corresponding pectoral muscle; and, again, between the sternal extremities of the two first ribs and pleura.

A disease of the joints: consisting of a most violent inflammation of the synovial membrane; its distension with purulent matter; destruction of the cartilage, and baring of the bones; all these changes taking place in a few days. Besides these affections, there were found, within the cranium, opacity and thickening of the arachnoid membrane; effusion between it and the pia mater; and increased secretion into the ventricles.

The morbid appearances above described are met with, singly or variously combined, in particular cases; and from the variety of situations in which these secondary local affections have been observed, it seems probable that there are few organs or parts in which they may not occur. But, although some of them are generally found present, the constitutional affection in phlebitis occasionally proves fatal without a secondary local affection having developed itself.*

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* Lee on Phlebitis, p. 45.

† Ibid. pp. 23, 24.

‡ Ibid. p. 23.; Hasse, p. 24.

§ Hasse, p. 21.

The same author, in enumerating the post-mortem appearances where general infection had followed injuries of the head, adds to this list collections of pus in the liver, of which we have already spoken in treating of hepatitis; and mentions also a deposition of purulent matter in the substance of the heart, in the kidneys, and in the spleen; albuminous effusion on the surface of the intestines; and inflammation of the liver without the formation of matter.†

So diligently indeed did Mr. Arnott search out the varied gifts of this phlebitic Pandora, that he has left little space for the discoveries of more recent inquirers.

The appearances of pulmonic inflammation in these cases, often distinguished as lobular pneumonia, have been well and concisely traced by Mr. Lee. Thus, he writes that, when puriform fluid has entered the circulation, the first appearance produced in the structure of the lungs is that of one or more congested or dilated veins of very small diameter. This will be followed by a well-defined spot of much darker colour than the surrounding texture. Several of these spots will probably appear at the same time, and each one of them will soon become surrounded by a hard spherical patch of purple congestion. Effusion of lymph will now take place, commencing in the centre of each affected portion, and gradually extending towards the circumference. If the disease continue, each spot will suppurate, and the different parts will become softened and broken down in the same order in which they were previously solidified.‡ Such a description, if admitted as correct, at once decides the question referred to by Dr. Hasse, and at one time much agitated, namely, whether the pus formed within the veins at the part originally inflamed be substantively and in quantity transmitted through the medium of the circulating current to the liver, the lungs, &c., to accumulate at certain points within the latter; or whether it be actually generated in the parenchyma of those organs. It can now be no longer doubtful that the latter is the correct opinion; the pus or other vitiating principle being carried forward with the blood, and, when detained in the capillaries of distant organs, constituting the nucleus of changes which eventuate in purulent formations.

The question whether these noxious principles, whether pus or altered fibrin, can traverse one set of capillaries, whether of the lungs or liver, according as they are conveyed by veins of the systemic or portal system, without inflicting injury, and subsequently give rise to the wonted mischiefs in the capillaries of other organs, as of the liver or lungs, or in those of the greater circulation generally, seems as yet not to have received a satisfactory solution.*

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* Medico-Chir. Trans. xv. pp. 54, 55, 56, 57. † Ibid. pp. 94, 95.

‡ Lee, pp. 51, 52.

Regarding the causes of phlebitis, Dr. Hasse states that it may arise under a great variety of circumstances. It is as frequently the consequence of slight external lesions, venesection for instance, as of great surgical operations and of extensive sores. Upon the whole, he says, we may regard with alarm every instance of profuse suppuration occurring in the proximity of such veins as remain open-mouthed when wounded, either owing to anatomical situation, as in the instance of the veins of the diploe, of the axillary veins, of those within the uterus, within the liver, &c.; or to some morbid change of structure consequent upon inflammation, varicose distension, and the like; or, lastly, to the surrounding cellular tissue thickening, assuming a lardaceous character, and thereby keeping the parietes of the veins upon the stretch. This is the reason why phlebitis is so frequent and fraught with danger after wounds of the head, and after the operation of lithotomy; and also why phlebitis, artificially induced for the purpose of obliterating varicose distensions, so readily spreads to an alarming extent when once it gets beyond the adhesive stage.†

It is hardly possible to decide whether, in puerperal diseases, septical influences co-operate, or whether the same causes alone prevail with a disturbed and imperfect process of suppuration. At all events, puerperal phlebitis is one of the most frequent varieties. It develops itself with uncommon rapidity whenever, after expulsion of the fœtus and the placenta, the uterus does not contract properly, so that an extensive raw surface, with open-mouthed veins, is exposed.

Phlebitis may originate not only from traumatic and from purely septic causes, but likewise from rheumatic affections. It is then less prone to purulent formation than to plastic exudation, remaining stationary at the adhesive stage, and restricting itself, in many cases, to coagulation of the fibrin within the vessels.

Finally, it should not be overlooked that phlebitis is often developed under epidemic influence; in which respect it appears nearly allied to erysipelas.‡

"Whatever tends," writes Mr. Lee, "to favour the healthy reparation of a wounded vein, may be regarded as affording security against any subsequent disease; and the chief point in the local treatment is, perhaps, to prevent any accidental circumstances from interfering with the natural process of repair. When the powers of the constitution are enfeebled, even the natural motions of a part may interfere with recovery, and rest sometimes becomes an important object in the treatment. How necessary this is after childbirth, when the divided veins are being closed, every one who has attended such cases practically knows. Again, after bleeding, the arm will inflame in a much greater proportion of cases when the patient is obliged to follow his usual occupation, or, when from accidental circumstances, the arms are kept in motion."*

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* Hasse, p. 23.

† Ibid., pp. 26, 27.

‡ Ibid. pp. 27, 28. 30, 31.

We need scarcely point out the duty which presses upon medical men, of guarding against becoming the sources of these maladies, either by the use of foul lancets in venesection, or by attending the lying-in chamber when a possibility exists of exciting disease either through the hands or the clothes. Dr. Lever has recently insisted upon the peril of propagating puerperal fever in this manner; and we think that there is some, but a minor, peril of producing phlebitis in the same manner.

The treatment of phlebitis ought to be concentrated on the first period of the disease, viz. that of coagulation of the blood; for when the circulating mass has become infected, medicine is seldom of any avail. But if the views above detailed be admitted as correct, namely, that the obstruction of the veins, though productive of some inconvenience, is probably protective against far greater evils, we shall be careful, while endeavouring to regulate its measure, not too rudely or hastily to put a stop to its existence. It should be borne in mind that debility, however induced, is calculated in these cases to alter the character of the existing inflammation for the worse, by giving it a less plastic form, and favouring the production of pus: and if this be so, it will follow that bloodletting, indiscriminately or too freely employed, must be inappropriate and dangerous. And this inference we shall find supported by such experience as that of Dr. Ferguson, who relates that at a period when puerperal fever was rife, out of forty cases attacked with some form of the disease, treated without any bleeding or leeching, or any attempt to induce the constitutional effects of mercury, two only were fatal. It is supported also by the convincing reasoning of Sir Benjamin Brodie. When speaking of the treatment of inflammation of the veins, he says: "All the experience that I have had on the subject would lead me to believe that, like erysipelas, it has its origin in a low asthenic state of the system, and that those persons are especially liable to it, who have been much lowered by hæmorrhage at the time of an operation, or by too scanty a diet afterwards. An operation is a shock upon the system, making a great demand upon the vital powers. The effects of this shock are often much aggravated by loss of blood, and a very scanty diet actually makes the patient more liable to some kinds of inflammation. Our mode of practice ought to be rather to sustain his powers by allowing him wholesome nourishment, and not to add to the influence of the other depressing causes, the still worse one of starvation."

Dr. Lever† has mentioned a recommendation, contained in a forgotten French memoir, of the free use of quinine as preventive of puerperal fever when this is prevalent; and he speaks of his own experience having in some degree warranted the recommendation. We cannot undertake to say that bark or quinine possesses like protective power with regard to phlebitis; but in the case of much-debilitated patients having to undergo operations involving a risk of the supervention of the disease, it seems to us well deserving of a trial. And after the actual occurrence of a phlebitis the constitutional treatment should, we conceive, be of a supporting character; and among the remedies to be employed, bark and quinine would take a leading place. The severity of the local action, and the tension arising from congestion, justify in some cases the cautious application of leeches; and benefit is also likely to accrue from passing a moistened stick of lunar caustic over the course of the inflamed veins; while irritability and restlessness should be calmed by morphia, opium, or other narcotics. Our whole plan should be conducted on the principle of not marring nature's work; and on that of giving our patient strength to ward off or to endure the trials that may threaten or await him. This plan, it seems to us, is the best that can at any time be pursued,—the only one open to us after infection of the blood has actually taken place; though, in this last case, all treatment must languish from the despondency and all but despair of those who should direct it. If the vomiting be urgent, we should endeavour to relieve it by such means as are generally available for that purpose; the diarrhœa ought not to be too vigorously combated.

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* Lee, p. 62.

† Hunterian Oration, 1851, p. 21.

PODAGRA, OR GOUT.

Hereditary, arising without an apparent external cause, but preceded generally by an unusual affection of the stomach; pyrexia; pain at a joint (particularly of the great toe), attacking the articulations of the feet and hands, returning at intervals, and often alternating with affections of the stomach or other internal parts, are assigned by Dr. Cullen as the characteristics of gout.

A morbid action of a peculiar or specific nature seems to take place in the disease.

Of the gout there are three species or varieties,—the regular, atonic, and retrocedent.

The only disorder for which gout can possibly be mistaken is rheumatism; and cases do occur wherein there may be some difficulty in making a just discrimination; but the most certain way of distinguishing them will be to give due consideration to the predisposition in the habit, the symptoms which have preceded, the parts affected, the recurrences of the disease, and its connexion with the other parts of the system; which circumstances are usually different in the two diseases.

In gout, the pains generally attack the small joints, and are at the same time less inclined to shift; but when they do, they usually seize the corresponding limb, or some of the viscera; the parts are more red and swollen than in rheumatism, and the dyspeptic symptoms, which rarely precede rheumatism, are present, in a considerable degree, for some days prior to the commencement of a fit of the gout.

In gout, according to Dr. Copland, it seldom happens that more than one part is affected, and still more rarely that more than one is attacked at the same moment in the first fit. In gout, serous effusion into the cellular tissue is early in the fit; and, to the extent of admitting of slight pitting on pressure, the veins are turgescent in the vicinity of the affected part; the surface is inflamed, deeply red, shining as if varnished, exquisitely tender, very hot to the touch; and the epidermis is prone to desquamate at the subsidence of the inflammation. In gout, too, the remission of pain and pyrexia during the day is much more marked than in acute rheumatism. The profuse acid perspirations so common in acute rheumatism are not generally observed in gout.

Dr. Garrod, in a lecture published in the Medical Times of 4th March, 1848, states, as the result of his own researches, that in gout the blood always contains uric acid in quantity considerably greater than that of health; that this acid is deficient or absent in the urine immediately prior to the gouty paroxysm; and that in those subject to chronic gout this acid is always present in the blood and deficient in the urine. He found besides that the blood in gout sometimes yields urea. Of rheumatic blood, on the contrary, he remarks, that it contains no more uric acid than the exceedingly minute quantity discoverable in healthy blood, and that no urea was to be detected in it. In rheumatism, according to Dr. Wright, there is more lactic acid found in the secretions than in gout; and he states it as certain that you find lactate of soda in rheumatism, and lithate of soda in gout.

Gout, then, or the gouty diathesis, may be considered to consist in a fault of assimilation, either primary, secondary, or both, whereby there is a tendency to the production of an excessive quantity of uric acid and urates. Now it is easy to comprehend how this tendency, having a congenital origin, may be checked in its manifestation by very temperate or abstemious living, whereby the animal nitrogenised materials on which the assimilating organs have to act are brought within the range of their powers of proper action. Or, again, we can conceive how there will be less likelihood of its showing itself during the period of growth in either sex, or that of menstruation or pregnancy in the female, during which digestion is most active, and there is a greater demand than subsequently for the appropriation by the system of animal material; the condition here being in fact analogous to that in the former case, as, under these circumstances, the supplies of material subjected to assimilation are less likely to be excessive in proportion to the greater wants of the system, and to the greater powers of the assimilating organs. We can understand also how proper attention to exercise may have a farther beneficial effect, both as tending to invigorate the digestive as well as the other organs of the body, and to give activity to the functions of the skin, so as at the same time to make it conduce to the health of other organs, and to relieve the system from an accumulation of morbid matters by the abundance of its excretions. If the excessive production of lithic acid be obviated, the evil is counteracted at its source; if the elimination of this product through fitting channels, as the skin or kidneys, can be procured, the disorders arising from its excess are prevented. In the gouty fit, nature endeavours to free the system at the expense of the part affected. The effort is of a remedial character; if it be checked, we have retrocedent gout, the action of the morbid material declaring itself on some internal organ or on the system at large. The same inconvenience arises in atonic and irregular gout, where no effort is made to depurate the blood by means of the affection of the joints; the materies morbi, if it find no escape by the kidneys or skin, excites disorder or disease in other parts.

We have spoken above of the circumstances which check or arrest the development of gout. The opposites of these will of course have a contrary effect. The hereditary predisposition may be so strong that no discipline, however judicious, can prevent its taking effect; or, in the absence of all such predisposition, habitual high living, with bodily inactivity, may give rise to the disease. Indulgence in the use of wine generally favours its production; though some wines, as champagne, have this property in a more marked degree than others. On the one hand there is hereditary gout, due mainly or exclusively to predisposition; on the other there is acquired gout, originating in the excessive operation of what in the other cases may be ranked only as its exciting causes. Between these two extremes we have cases where these two classes of causes co-operate in ever-varying relative efficiency to the production of the result. Granting that acute rheumatism is, as Dr. Taylor designates it, a blood disease,—that is to say, one in which there is an abnormal condition of the blood,—we find nevertheless this difference between rheumatism and gout, that in the latter the change of the circulating fluid is the starting point of the disease, whereas in the former we look upon it rather as a secondary or intermediate link in the concatenation of phenomena.

The function of digestion may deviate in two respects from the condition of health, inasmuch as there may either be more or less of pain or uneasiness attendant upon the process itself, without, nevertheless, any great change in the products or results of that process; or, on the other hand, little or no pain may mark the process, while yet its results may be imperfect or perverted. It is probable that neither of these errors of function is observed alone, yet the one or other may predominate; giving rise, in the first place, to the recognised forms of dyspepsia; in the other, declaring itself in the form of gout, or of various cutaneous or other affections.

Rheumatism and gout are sometimes combined, as in what is denominated rheumatic gout; in which cases a diagnosis is neither necessary nor possible.

The attacks of gout are chiefly in the spring of the year and the beginning of winter, and the disease seldom appears at an earlier period of life than from five-and-thirty to forty.

Gout chiefly attacks men, and particularly those who have a family predisposition to it; those who live well, and lead a sedentary life; those who are addicted to literary pursuits; those who keep late hours, or who are in the decline of life; but we meet with it now and then in females of a full and robust habit of body, or in those whose parents have been severely afflicted with it. Men who are employed in constant bodily labour, or who live much upon vegetable food, as well as those who make use of wine and other fermented liquors very sparingly, are not often afflicted with the gout. It rarely occurs before the age of puberty; yet we have heard of a well-marked case of the disease occurring in a boy of four years of age; and Dr. Copland speaks of having himself met with it in two patients of nine and eleven years old. Eunuchs are seldom attacked by it.

The exciting causes of the gout may be divided into those which induce a plethoric state of the body, and those which occasion weakness of the body in general, or of the stomach in particular. Among the latter may be enumerated, intemperance of every kind, late hours, intense application to study, long want of rest, much grief or anxiety of mind, great sensuality, long-continued fatigue; exposure to cold, particularly by getting wet in the feet; too free a use of acescent wines, such as claret and champagne; a sudden change from a full to a spare diet, excessive evacuations, accumulated acidity in the primæ viæ, violent passions of the mind, &c. A full diet of animal food, ragouts, and rich sauces, with a free use of fermented liquors, such as beer, ale, porter, and wine, together with indolence and inactivity, are the causes which give rise to corpulency and a plethoric state of body; hence the frequency of gout among the rich.

Dr. Darwin mentions it as a common opinion, that this disease is as frequently owing to gluttony in eating, as to intemperance in drinking fermented or spirituous liquors; but that he has never seen any person afflicted with the gout who has not drank freely of fermented liquors, as beer or wine; though, as the disposition to all the diseases which have originated from intoxication is in some degree hereditary, a less quantity of spirituous potation will induce the gout in those who inherit the disposition or constitutional bias from their parents.

As regards the effects of ardent spirits in the production of gout, we believe general experience to be in accordance with the statement of Dr. Seymour, when he says (in his Thoughts on the Nature and Treatment of several severe Diseases of the Human Body, page 79.), "Drunkards, simply speaking, are not gouty. In countries where large, very large, quantities of whiskey or spirits are swallowed daily, gout is unknown. The brain is destroyed, the liver is disorganised, but gout is unknown. Madness, apoplexy, dropsy in all forms are produced, but not gout."

A fit of the gout is sometimes brought on by severe exercise or walking far, and sometimes by a sprain; while the disease has appeared in some instances to be under the influence of the imagination; for terror suddenly excited, such as by the house of the patient taking fire, has been known in a few minutes to restore the use of his limbs, and admit of his escape with great ease.

A paroxysm of regular gout sometimes comes on suddenly, without any warning; at other times it is preceded by an unusual coldness of the feet and legs, a suppression of perspiration in them, and numbness; or by a sense of pricking along the whole of the lower extremities; and with these symptoms the appetite is diminished, the stomach is troubled with flatulency and indigestion, a degree of torpor or languor is felt over the whole body, great lassitude and fatigue are experienced afer the least exercise, the body is costive, and the urine pallid. Some previous affection of the stomach, or dyspepsia, almost constantly occurs.

On the night of the attack, the patient perhaps goes to bed in tolerable health, and after a few hours is awakened by the severity of the pain, which has affected either the joint of the great toe, the heel, calf of the leg, or, perhaps, the whole of the foot; and this becoming at length still more violent, is succeeded by rigors and a severe throbbing and inflammation in the part. Sometimes both feet become swelled and inflamed so that neither of them can be put to the ground, nor can the patient endure the least motion without suffering excruciating pain.

Towards morning he falls asleep, and a gentle sweat breaks out, and terminates the paroxysm, a number of which constitute what is called a fit of the gout, which will be longer or shorter, according to the disposition of the body to the disease, the season of the year, and the age and strength of the patient.

After the paroxysm, although there is an alleviation of pain at the expiration of some hours, still the patient is not entirely relieved; and for some evenings successively he has a return of both pain and pyrexia, which continue with more or less violence until morning.

In time the redness and swelling abate, the paroxysms prove more mild every day; till at length the disease goes off, either by perspiration, increased flow of urine, or some other evacuation; the parts which have been affected becoming itchy, the cuticle falling off in scales from them, and some slight degree of lameness remaining; the patient, however, enjoying a better appetite and spirits than he had experienced for some time before.

At first an attack of gout occurs perhaps only once in two or three years; it then probably comes on every year, and at length it becomes more frequent.

It may be stated, that gout, with little exception, acquires strength with each returning fit, both as to the number of parts which it attacks, and as to the duration and degree of suffering; and it does not, like some chronic diseases, wear itself out by repetition, and yield to the power of time. A premature old age comes on, and, together with painful and crippled limbs, the nervous system is so enfeebled, that both mind and body become less equal to sustain the conflict.

In the progress of the disease various parts of the body are affected, and translations take place from one joint or limb to another; and after frequent attacks the joints lose their strength and flexibility, and become so stiff as to be deprived of all motion. In some instances little swellings, of a very hard nature, arise in the joints of the fingers, to which a late writer has applied the title of nodosities. Nephritic affections arise also, calculi are produced, and concretions are formed upon some of the joints, particularly on those of the fingers, owing to a deposit of the same kind of matter in them. The fluid which is so effused is at first white; by degrees the watery and serous particles are absorbed, leaving a substance which is soft and clayey, and that afterwards becomes hard and friable.

This effusion occurs not only during fits of gout, but likewise in the intervals; and as the extremities, particularly the hands and feet, are the principal seat of gout, it is there that the greatest accumulations take place. Though this process is usually preceded by, and accompanied with, inflammation, the concretion is never enclosed in a cyst like pus in an abscess. It lies usually in the cellular membrane, in the bursæ mucosæ, or in the cavities of the joints. After a long continuance of the disease the quantity at last accumulated becomes considerable, and seriously augments the sufferings of the patient; by its bulk greatly distends the surrounding parts, and obstructs the motion of the tendons and joints, often occasioning a complete anchylosis. The cutis, when distended to the utmost by frequent deposits, sometimes gives way, and an opening is formed through which a quantity of it is evacuated.

The fluid deposited in gout, and which after a time becomes solid and forms concretions, has usually been considered of a chalky nature, and the term chalky concretions has been applied to them. The name, however, is incorrect, as it has been proved by the analysis of Dr. Wollaston*, that they consist of uric acid and soda; consequently the appellation of urate of soda is the appropriate one. The existence of uric acid in arthritic concretions has likewise been established by Dr. G. Pearson in various experiments; and Fourcroy found the same result.

It sometimes happens, that although a gouty diathesis prevails in the system, yet from certain causes no inflammatory affection of the joints is produced; in which case the stomach becomes particularly affected, and the patient is troubled with flatulency, indigestion, violent pain, loss of appetite, eructations, nausea, vomiting, and a peculiar sense of cold in the epigastric region; and these affections are often accompanied with much dejection of spirits and other hypochondriacal symptoms. In some cases the head is affected with pains and giddiness, and now and then with a tendency to apoplexy; and in other cases the viscera of the thorax suffer from the disease, and palpitations, faintings, cramps, and asthma arise. This is what is called atonic or irregular gout.

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* See Philosophical Transactions, 1797.

It likewise happens sometimes, that after the inflammation has occupied a joint, instead of its continuing the usual time, and then going off gradually, it ceases suddenly, and is translated to some internal part. The term of retrocedent gout is applied to occurrences of this nature. When it falls on the stomach, it occasions nausea, vomiting, anxiety, or great pain, with a sensation of coldness in the epigastric region; when on the heart, it brings on syncope; when on the lungs, it produces an affection resembling asthma; and when it occupies the head, it is apt to give rise to apoplexy or palsy. In retrocedent or repelled gout, we generally find the disease on the stomach producing violent pain, sickness, vomiting, &c., and patients have died in a few minutes after such an attack; indeed the symptoms are so violent, that they generally think themselves dying. It seems closely connected with a spasmodic affection of the stomach.

All occurrences of this nature, as well as of irregular gout, are to be guarded against as much as possible.

The prognosis in gout may be considered as favourable when the internal organs are sound in structure, and not materially disturbed in their functions; when the tongue becomes moist and clean; when there is a return of the natural appetite, the fæces recovering a healthy appearance, the urine ceasing to deposit a sediment, and at the same time losing its high specific gravity; when the nervous system becomes tranquil, and when the local sensations readily yield to remedies, the local inflammation soon abating, and not showing a disposition to quick transference from one part to another; or if it be fugitive, not fixing severely on new parts. In a regular fit of the gout, there is seldom any great danger, and by some it has been considered as the precursor of health; it is only where the disease appears under an irregular or repelled form that danger arises, as when the stomach, heart, lung, or head becomes affected. A quick transference of severe inflammation from one part to another, joined with painful sympathy of the stomach or head, or with exquisite sensibility of the whole nervous system, are to be considered among the unfavourable signs in gout. In some cases the whole system becomes weak and languid, dyspepsia and syncope supervene, and the disease at last terminates in palsy, asthma, or dropsy, appearing most commonly in the form of hydrothorax.

In youth the disease admits more readily of alleviation than in an advanced period of life; and its attacks may be rendered milder when acquired, than when it proceeds from an hereditary predisposition: moreover, the fit is generally shorter in proportion to the violence of the febrile symptoms and the length of intermission.

When the constitution has suffered great ravages from frequent and severe attacks of the gout, various morbid affections of the viscera are to be observed on dissection; calculi of different sizes and colour are to be found in the kidneys; and on examining the joints which have been rendered stiff and immovable, it appears as if their motion had been destroyed by the formation of concretions.

Notwithstanding the many remedies which have been highly extolled at different times for the cure of gout, it is a fact well established, that not one which has yet been offered possesses any such power; and all that can be done with safety to the patient is to conduct him judiciously through the paroxysm when it has once commenced; and afterwards, by getting him to abstain from the remote causes, such as full living, acescent food or drink, strong liquors, &c., and by enforcing the use of gentle daily exercise, to render recurrences of the disease less frequent and more mild than they otherwise might be. In short, great temperance and regular moderate exercise are the most likely means to prevent severe and frequent attacks.

During a paroxysm of the gout, if the attack is severe, it may be necessary to confine the patient in bed, and to keep him as quiet and free from all irritation as possible. If the patient is young and plethoric, he should abstain from all sorts of animal food, aromatics, and fermented liquors; living on water-gruel, panado, sago, arrowroot, and other farinaceous substances. His drink should be some mild diluting beverage, such as barley-water, toast-and-water, or tea. To elderly people, in whom the tone of the stomach is weak, and to patients habitually using strong liquors, and living principally on animal food, a more generous diet, with a moderate use of wine, may be allowed; and as Madeira and sherry wines are the least apt to become acid on the stomach, they ought to be used in preference to any others.

In acute gout great relief is afforded to the patient by the application of four or five leeches to the affected joint, followed by warm, soft, and light poultices of bread and water, or by fomentations with flannels wrung out of warm or tepid water. In this, as in other cases, the common error of making the local applications too hot is to be avoided; and, in this respect, the feelings of the patient will be a good guide. By these means, tension and heat are diminished, so as to occasion considerable abatement of pain; and this object is effected without the hazard of repelling the local affection, which renders the perhaps more soothing employment of cold applications unadvisable because unsafe. When the patient is in bed, a cradle over the affected limb is very serviceable in protecting it both from the pressure and warmth of the bed-clothes.

It is well known that various diseases of the head, as headach, vertigo, mania, epilepsy, apoplexy, and great depression of spirits, in many instances, immediately or soon succeed the recession of inflammatory gout from the extremities; and a writer of eminence has recorded[*] two cases where immersion of a gouty foot in water produced instant relief from the pain, and abatement of the inflammation, followed in a few hours by hemiplegia, so as to show clearly the danger of adopting Dr. Kinglake's plan.

The application of cold water in gouty paroxysms has not, however, originated with Dr. Kinglake; for it is a mode of treatment noticed by Hippocrates and Celsus, and even by some modern writers.[†] It is therefore only the revival of a practice which has frequently been brought forward and again abandoned.

Another physician[‡] tells us, that, with regard to external applications in the gout, none out of the many which he had tried proved so effectual as steam, and occasionally confining the inflamed parts in a rarer atmosphere; for which purpose he recommends a steady use of the air-pump vapour-bath every second or third day. This treatment, we are informed, has not only the happiest effects on the paroxysms while present, but renders subsequent ones more mild, prolonging also the intervals between them.

Gout not being, however, a mere local complaint, as Dr. Kinglake and some others seem to imagine, but really a constitutional one, local applications, when resorted to, should always be joined with internal remedies. Of the two external applications just mentioned, the latter seems to be the safer, although it may not probably carry off inflammation in the limb so quickly as the former.

Instead of recommending cold applications to parts affected with gouty inflammation, a modern writer[§] maintains that much benefit may be derived from constantly moistening them with tepid water, as may be done either by means of a sponge, or perhaps more effectually by cloths wetted in it, and renewed as often as they become dry.

The refrigerating influence produced by incessantly moistening the inflamed part with a tepid fluid, and leaving it to dry by evaporation, will certainly be powerful; and I have experienced it to be a much safer method of reducing heat than that advised by Dr. Kinglake.

Blistering, sinapisms, stinging with nettles, burning with moxa, as practised in the East Indies; rubbing the part with camphorated spirits, pediluvium of simple water, a tepid bath of water and muriatic acid, in the proportion of one ounce to a gallon of water, and covering the part with oil-skin, are remedies which have been proposed for bringing a fit of the gout sooner to a termination, when it has been very tedious; but they are all attended with some risk, and therefore ought to be avoided.

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[*] See Elements of Pathology and Therapeutics, by Dr. Parry, p. 396.

[†] See Mr. Rigby's Treatise on Animal Heat.—Medical Observations, vol. vi.

[‡] See Dr. Blegborough's Communications on Gout, vol. xii. p. 62. of the Medical and Physical Journal.

[§] See Treatise on the Gout, by C. Scudamore, M.D.

To lessen the violence of the inflammation in very severe paroxysms of the gout, topical bleeding has sometimes been employed, and with occasional advantage.

We are decided advocates for the sparing application of leeches, from the belief that considerable abatement of the local suffering may be obtained by the loss of a quantity of blood far too small to produce any constitutional depression. In determining the number to be put on, it is to be borne in mind that the bites are liable to bleed freely; yet the drain from three or four leeches can hardly hurt the system so much as the endurance of as much pain as their employment is calculated to remove. It is only, however, where the local affection is confined to a single joint, and is attended by much heat and swelling, that we contend for this treatment.

With respect to drawing blood from the system, this would only be justifiable in those cases where either the lungs or head are violently affected from irregular or translated gout. Notwithstanding the prejudice which has prevailed against a use of the lancet in gout, some few physicians (among whom is the late Dr. Heberden) have given it as their opinion, that bleeding is both necessary and advisable where the inflammation is considerable and the pains are very acute; and they seem to think that it will weaken the tone of the vessels less, and not be so likely to cause a relapse, as by suffering the violence of the inflammation to continue without a check. As gout seldom, however, occurs but in habits previously debilitated by intemperance, indolence, sensuality, or the like causes, the nicest judgment and strictest caution are requisite in carrying this portion of the antiphlogistic plan into execution.

"Blood-letting," according to Dr. Copland, "is required in the plethoric and robust, and in early attacks, when the constitution is unbroken, and the inflammatory diathesis evidently exists." "The practitioner," he subsequently adds, "should be guided as to the extent of the depletion by the circumstances above alluded to, keeping in view the fact, that the disease is one more of irritation than of inflammation."

The employment of purgatives in the paroxysm of gout is more universally advocated than recourse to the lancet; and those which are characterised as chologogues are to be preferred. Dr. Holland, in his "Medical Notes," particularly mentions calomel as promoting the action of colchicum in removing the attack; and it is upon calomel with rhubarb, or jalap, that we place most reliance. Two or three grains of calomel, with as many of powdered ginger, and twelve or fifteen of rhubarb or jalap, should be given on alternate mornings, till the bowels are thoroughly unloaded, and the alvine evacuations are nearly or quite restored to a natural appearance.

At the same time, a draught, such as those prescribed below*, should be administered twice or three times a day, till the pyrexia is subdued, or till the colchicum begins to produce symptoms of irritation. We address our first care to the organs of digestion, from a belief that they are primarily in fault, as evinced by the dyspeptic symptoms generally preceding the attack, the loaded tongue which ordinarily accompanies it, and the undue production of lithic acid which is observed in it. We conceive, besides, that depuration of the blood takes place by means of the exhalants of the alimentary

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* ℞ Magnes. Carbonat. ℈j. Mistur. Acaciæ, Syrup. Aurantii, ā ʒj. Aquæ Cinnamomi, ʒx. Tinctur. Colchici, ♏xij. Misce. Fiat haustus ter die sumendus.	* Take Carbonate of Magnesia, a scruple. Mixture of Gum Arabic. Syrup of Orange Peel, of each a drachm. Cinnamon Water, ten drachms. Tincture of Colchicum, twelve minims. Mix for a draught to be taken thrice a day.
Vel, ℞ Mistur. Cretæ ℥iss. Magnes. Sulphat. ʒss. Tinctur. Colchici, ♏xij. Misce.	*Or,* Take Chalk Mixture, an ounce and a half. Epsom Salts, half a drachm. Tincture of Colchicum, twelve minims. Mix.
Vel, ℞ Liquor. Potassæ, ʒss. Extract. Taraxaci, Syrup. ā ʒj. Aquæ Pimentæ, ʒx. Tinctur. Colchici, ♏x. Misce.	*Or,* Take Potash Water, half a drachm. Extract of Dandelion. Syrup, of each a drachm. Allspice Water, ten drachms. Tincture of Colchicum, ten minims. Mix.
Vel, ℞ Decoct. Aloes Comp. ℥ss. Aquæ Piment. ℥j. Tinctur. Colchici Comp. ♏xv. Misce.	*Or,* Take Compound Decoction of aloes, half an ounce. Allspice Water, an ounce. Compound Tincture of Colchicum, fifteen minims. Mix.

The late Mr. A. White, himself a very severe sufferer from gout, with which his brothers were sorely afflicted, also referred the origin of the malady, in some papers published not very long before his death, to hepatic derangement, and had adopted the following form of pills as a nostrum, upon which he states he relies almost exclusively for the cure of the gouty paroxysm.

℞ Hydrarg. Chlorid. Extracti Colchici Acetici, Extracti Aloes purificati, sing. gr. j. Pulv. Ipecac. gr. ij. Misce. Fiat pilula quartis horis sumend.	Take Calomel. Acetic Extract of Colchicum. Purified Extract of Aloes, of each one grain. Ipecacuanha Powder, two grains, Make a pill to be taken every four hours.

Two or three of such pills, he goes on to say, are generally enough to produce a considerable disgorgement of the liver, which I then assist with one or two doses of compound decoction of aloes. By this time the paroxysm has ceased, or is abated. The pills may then be administered at longer intervals of eight or twenty-four hours. Such was the leading treatment of one so conversant with the disease; yet we know not that it is recommended either by the amount of his sufferings in life or the manner of his death.

canal as safely, and more surely than by any other channels; or, at least, that till its functions are restored to a healthy state, little impression can be made upon the disease by means directed to the kidneys or the skin.

In arthritic affections, gentle sudorifics* are sometimes of service: they should not, however, be selected from the stimulant or aromatic kind; nor be given in a large dose to excite profuse sweating, but only so as to promote and keep up a gentle diaphoresis. Antimonials, or ipecacuanha in small doses frequently repeated, or volatile salines, assisted by diluting liquors and temperate warmth, may be employed.

From the severity of the pain in gout opiates are sometimes resorted to; but when given in the beginning of gouty paroxysms, or where there is much inflammation, they often make them return with greater violence; but in those cases where the person is far advanced in life, has had frequent attacks, and where there is little or no inflammation, but merely restlessness and pain, they may be given with safety and advantage. About ten grains of Dover's powder, taken at bedtime, may be preferable to the tinctura opii. Opium or morphia, taken in doses sufficiently large to ease pain and induce sleep, conjoined with any antimonial or with colchicum, and followed up by suitable and adequate purgatives, may, I think, be safely relied upon in all cases of gout, where there is no indication to forbid their use.

Where there exists an inflammatory diathesis, or a constipated state of the bowels, these should always be removed prior to the administration of opium. Where opium is found to disagree, we may substitute the use of hyoscyamus.

On the termination of a fit of the gout, a fresh paroxysm is to be delayed or rendered less violent by observing great temperance during the intervals; by avoiding the exciting causes of the disease; by moderate regular exercise every day; by guarding against cold;

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* ℞ Succi Limon. f. ℥ss.
Ammoniæ Subcarbon. q. s. ad ejus saturationem; deinde adde

Aq. Puræ, f. ʒvj.
Vini Antimon. Tart. ♏xv.

Syrup. Cort. Aurant. f. ʒj. M.

Ft. haustus, 4tâ vel 6tâ horâ adhibendus.

Vel,

℞ Liquor. Ammon. Acet. f. ʒiij.

Misturæ Camphoræ, f. ℥xj.
Vini Antimon. Tart. ♏xv.

Syrup. Cort. Aurant. f. ʒj. M.
Ft. haustus.

* Take Lemon Juice, half an ounce.
Subcarbonate of Ammonia, a sufficiency for saturation.
Then add
Pure Water, six drachms.
Wine of Tartarized Antimony, fifteen minims.
Syrup of Orange Peel, one drachm.
This draught is to be given every four or six hours.

Or,

Take Solution of Acetate of Ammonia, three drachms.
Camphor Mixture, eleven drachms.
Wine of Tartarized Antimony, fifteen minims.
Syrup of Orange Peel, one drachm.
Mix them for a draught.

and by strengthening the body. In young persons, a cold bath, with moderate exercise afterwards, may probably be used with advantage during the intervals; but in elderly people, or where there is any inflammation of the joints, this remedy should never be recommended.

Care should be taken to insure a regular action of the bowels, and this is best effected by such medicines as at the same time tend either to prevent the excessive formation of acid, or to neutralize it when formed; for the former of which purposes the alkaline earths—as chalk and carbonate of magnesia—have appeared to us far preferable to soda and potass, as having a more soothing influence on the mucous membrane to which they are applied, and thereby allaying that irritation which is wont to give rise to an abnormal amount of acid secretion. There is, besides, no fear of giving them in excess, so as to produce a too alkaline condition of the secretions: the only caution required being, that, by a moderate action of the bowels, they be prevented accumulating in the intestines. With these views we recommend to the gouty an occasional recourse to some mild laxative,—as carbonate of magnesia with rhubarb, or with sulphur, or with Epsom salts; or, if the bowels are disposed to be relaxed, a scruple or half a drachm of these last dissolved in an ounce and a half of chalk mixture, taken two or three times a day, will remove irritating substances and depraved secretions, and produce in a short time a more quiescent state of the primæ viæ, and a more comfortable condition of the patient. If there be at any time a tendency to hepatic disturbance, as indicated by pale evacuations, and sallowness of the conjunctivæ, a blue pill should be given occasionally, in addition to one or other of the mild laxatives mentioned above; or four or five grains of blue pill with as much cathartic extract may be given on alternate nights, till the sallowness disappears. For such as are advanced in years, or have suffered in constitution from repeated attacks of gout, whose powers of digestion are enfeebled, and who are prone to flatulency, we know of no better medicine, as an occasional aperient, than about six drachms of compound decoction of aloes with as much pimenta water, together with twenty or thirty minims of sal volatile, and to be taken once or twice a day, according to circumstances. To this draught, from six to ten minims of tincture of colchicum may be added, if there be aches or pains constituting a distinct threatening of an attack of gout; and in this form the remedy will be found useful in atonic gout generally.

In consequence of frequent attacks of the gout, assisted, probably, by some peculiarity of the patient's constitution or habit of body, little swellings or nodosities arise on or near the joints of the fingers.

Dr. Bardsley, physician to the Manchester Infirmary, mentions, in his Medical Reports, that he looks on these as more nearly allied to chronic rheumatism than to gout. He has therein given the history of three cases of this nature, in the last of which, after a fair but unsuccessful trial of arsenic, cod-liver oil (a remedy much used in Lancashire), cinchona, guaiacum, and warm bathing, he had recourse to mercurial frictions; and, by establishing and keeping up for some time a gentle salivation, with the assistance of tepid bathing, and topical bleedings by leeches, he effected a cure. From this instance he appears to think that mercury is capable of destroying the disease when in its incipient state.

We believe that it would be much more in accordance with the practice of the most judicious physicians of the present day, founded on a more just recognition of the limits assigned to the powers of medicine, to abstain from all interference with such disfigured or distorted parts; except on occasions when they may have become more than ordinarily painful, in which case the application of a leech or two to the inflamed spot, and attention to the functions of the bowels by means of the simple antacid and absorbent aperients already spoken of, will obtain for the patient as much relief as can be fairly promised; as much therefore as it is desirable to attempt. Dr. Wright of Birmingham has recommended soaking the swollen joints suffering from acute rheumatism in warm water, rendered somewhat alkaline by common soda; and we have tried this plan with some apparent benefit. This treatment would deserve a trial with gouty joints under the circumstances here mentioned. When the parts are in a completely chronic state, nearly free from pain when at rest, but with enlargement from thickening of the ligaments, and some stiffness, and perhaps a little tenderness also, our advice to the patient would be, that he should leave them alone. If, however, curative measures are to be repeated, painting with the tincture of iodine, or the application of a little compound iodine ointment every night; or rubbing with moistened nitrate of silver or iodide of sulphur ointment may be resorted to and persevered in; and possibly some advantage may arise for a time; but who shall assure us that its continuance will repay the trouble and annoyance to the patient? A protracted mercurial course, however mild, for such an object would scarcely be thought justifiable, notwithstanding the above example of its success. Dr. Copland speaks of sponging the surface with a strong tepid solution of salt in water as often of service in the chronic stage of gout, and says that frictions, with slightly stimulating liniments, as the compound camphor and compound soap liniments conjoined, are generally beneficial, to which may be added, in the more indolent cases, spirits of turpentine and cajeput oil. Any suggestion from so high an authority is of course entitled to attention.

When gout attacks a part in which there is an accumulation of urate of soda, and which is highly inflamed, the best application will be an emollient poultice, after previous fomentations with flannels wrung out in the decoctum papaveris made warm. If the cutis opens, yet leaves the effusion of urate of soda confined by the cuticle only, a small puncture may be made. This will permit some portion to escape, and more will come out into the poultice, by which means the tension will be removed. When the inflammation has subsided, greater freedom may be used. Some portion of the cuticle may then be removed to facilitate the discharge, and gentle pressure be employed.

Where ulceration remains behind the urate of soda at the bottom, after the violence of the fit has subsided in severe attacks, mild dressings only ought to be used: for as gouty habits are always irritable, stimulants, such as the hydrargyri nitrico-oxydum, or any caustic application, might do mischief.

Masses of urate of soda are sometimes formed, however, on parts so inconvenient, or occasioning such deformity, that the patient is anxious to get rid of them even at some risk. On favourable occasions of this nature, where the constitution is sound, and the means recommended by Dr. Bardsley and Mr. Parkinson have failed to produce the intended effect, this may be obtained by destroying the skin with the potassa fusa. After the opening is formed, the sore is to be treated in the common manner.

In the 24th volume of the "Medico-Chirurgical Transactions" will be found an interesting paper by Mr. Ure on the subject of gouty concretions, the object of which is to direct attention to the fact that benzoic acid, or the benzoates of potash, or ammonia, taken internally, have the property of causing the excretion of hippuric acid. Now urate of soda, the chief ingredient of gouty concretions, is so sparingly soluble, that one part, according to this author, requires about four thousand parts of water to dissolve it; whereas one part of hippurate of soda dissolves in two parts of temperate water, and other hippurates — as those of potash, ammonia, and lime — are also exceedingly soluble salts. The insolubility of the urate of soda being then assumed as the cause of its deposition, or permanent abode in the affected joints, it is suggested that the conversion of the substance to be eliminated from the blood into a very soluble body might prevent this or similar inconvenience. Mr. Ure, in the first place, ascertained that this secretion of hippuric by means of benzoic acid, could be perfectly accomplished without the slightest risk of affecting the general health, or of irritating the urinary organs; and the experience of others is in this respect in accordance with his own. These facts seem to entitle this plan of treatment with benzoic acid, or the benzoates, to a fair trial in cases where it is an object to prevent the continued accumulation of chalk stones (it can hardly be expected to exert any influence on the concretions already formed); and we therefore bring it under the notice of our readers, although we entertain no very sanguine hopes of its success. As far as essential benefit is to be derived from procuring a soluble instead of insoluble material for excretion, the administration of potass favouring the formation of the soluble urate of potass seems to promise as much as can be expected from benzoic acid, or the benzoates. In either way the treatment is only palliative. In the interval of the fits, we may have a state of chronic or atonic gout. Often immediately after one there is a greater than usual immunity from the *malaise* due to the disease: debility, more or less strongly marked, may be all that remains. To prevent the return of the attacks, abstinence from the exciting causes already pointed out will of course be necessary; alkalies and alkaline earths, though proper correctives of depraved secretions, and irritable conditions of the digestive organs, have little or no efficacy in obviating the recurrence of the actions in which the disease originates. For this purpose, a tonic treatment with due attention to the maintenance of the proper functions of every organ, will be the best protective. Even the mineral acids are known to be sometimes effectual in preventing the development of acidity: their physiological being directly opposed to their chemical action.

Dr. G. O. Rees has of late years introduced lemon juice as a remedy in rheumatism and some forms of gout; and it is not improbable that bitartrate of potash might have a similar effect; since both substances are convertible during their passage through the system into carbonate of potash. It is rather in a chronic or subacute form of the disease that lemon juice may be expected to prove beneficial; and in the former it is combined with tonics with advantage. Thus half an ounce of lemon juice with an ounce of infusion of gentian, or of calumba, or cascarilla may be given thrice a day: in pallid and anæmic subjects it may be given in combination with iron. Thus we have given it with the mistura ferri composita of the Pharmacopœia on the recommendation of Dr. Rees himself. We do not believe this acid to be a panacea; but it is a new weapon in our armoury against an obstinate chronic disease, a disease therefore which, according to Aretæus, demands the many resources of the physicians.

In irregular or atonic gout, no inflammation of the joints is produced, although the gouty diathesis prevails in the system, and the stomach is affected with indigestion, flatulency, acid eructations, and pain, the patient ought not only to avoid all sources of debility, but should employ proper means for strengthening the system in general, and the stomach in particular.

To support the tone of the system, a moderate quantity of animal food ought to be taken, and that which is nutritive and plain should be preferred. A little sherry or weak brandy and water may also be allowed.

To strengthen the stomach ammonia aromatics, the cinchona bark[*], sulphate of quinine, and chalybeates, such as the ferri sesquioxydum ferri sulphas, ammonio-citras, &c. may be given. Bitters and aromatics certainly give relief; but should not be too perseveringly employed.

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[*] ℞ Infus. Cascarillæ, f. ℥iv.
Tinct. Cort. Cinchonæ C.,
—— Cardam. C., āā f. ℥ss. M.
Ft. mistura, cujus sumat æger cochl. ij. ampla bis terve in die.

[*] Take Infusion of Cascarilla, four ounces.
Compound Tincture of Peruvian Bark,
—————— Cardamoms, of each half an ounce.
Of this mixture let the patient take two large spoonfuls twice or thrice a-day.

Some years ago, the Portland powder (a compound of bitter ingredients—viz. equal parts of the roots of round birthwort and gentian, of the leaves of germander, and ground pine, and of the tops of the lesser centaury—all dried) was much used by gouty people; but, from having proved pernicious in many instances, is now laid aside.

The vinum colchici, prepared from the roots of the meadow-saffron, and given in the quantity of half a fluid drachm twice a-day in any vehicle, has certainly been found a valuable remedy in both gout and rheumatism; but to render the success of the medicine more certain, the state of the bowels should be particularly attended to, the patient abstaining from all food likely to prove flatulent.

We have ourselves uniformly employed the tincture of colchicum of late years, and have found it a very powerful and valuable preparation. The dose given has varied from ten to fifteen minims thrice a day, in combination with magnesia, chalk, or potash. We conceive that it has a specific effect on the morbid actions existing in gout and rheumatism, which may be obtained independently of its purgative properties, or irritating action of the stomach. Dr. Holland, in his medical notes, conceives that it modifies the action of the kidneys; and this view is by no means improbable. If, however, it acts through the kidneys, it is by some peculiar power differing from that possessed by other diuretics. Purgatives are, as we have seen, allowed to be beneficial in gout; but it does not appear to us necessary or advisable to use colchicum in such doses as very speedily operate upon the bowels. Other aperients seem both more certain and more safe for the accomplishment of this object. We have been in the habit of employing combinations containing mercury. Dr. Holland states his belief that the simultaneous use of calomel renders the action of colchicum more secure. We are advocates of the interrupted actions of brisk cathartics on alternate days, rather than of the more continuous operation of milder ones; believing that by the former plan contiguous viscera—as the liver—are better unloaded, and the secretions of the mucous surfaces are more readily restored to a healthy state; while the objections to this treatment are founded in theory, and not upon experience. The powder of the cormus, and the acetic extract of

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Vel,	*Or,*
℞ Ferri Subcarbonatis, ʒij.	Take Subcarbonate of Iron, two drachms.
Pulv. Cort. Cinchonæ, ℥j.	Powder of Peruvian Bark, one ounce.
—— Cinnam. Compos. ʒjss.	Compound Powder of Cinnamon, one drachm and a half.
Syrup. Cort. Aurant. q. s. M.	Syrup of Orange Peel, a sufficiency
Ft. electuarium, de quo capiat quantitatem juglandis bis in die.	to form these ingredients into an electuary, of which the bulk of a walnut is to be taken twice a-day.

colchicum are also useful, and the latter a very powerful preparation. They may be given, the first in doses of one to three grains, the latter in that of half a grain, or a grain with the same frequency. Extract of conium, or Dover's powder, is a good adjunct, to be given either thrice a day or in a larger dose at night.

In the stomachs of gouty people, a morbid acidity, accompanied by heartburn and flatulence, is usually to be met with; and even this has been thought to have the power of bringing on the disease. Antacids have therefore been found a useful and salutary class of medicines for gouty persons; that most commonly used is magnesia, which proves both absorbent and laxative. To quicken its operation, if found necessary, we may combine * it with a small proportion of rhubarb.

If rhubarb disagree, aloes may be given in the quantity of five or six grains combined with any aromatic †, the intent being not to purge, but keep the bowels regular.

Alkalies in various forms—such as sesquicarbonate of ammonia, the fixed alkali, both mild and caustic, lime-water, and soap—have, however, been employed in gouty habits: and of late the alkaline aërated water has been much used. Since it became common to exhibit these medicines in nephritic calculous cases, it has often happened that they were given to those who were at the same time subject to the gout; and it has been observed, that under a use of these medicines gouty persons have received relief, and been longer free from attacks of the disease than before.

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* ℞ Magnesiæ Carbon. ʒss. Pulv. Rhei, gr. viij. —— Cinnam. C. gr. v. M. Ft. pulvis, pro re natâ sumendus.	* Take Carbonate of Magnesia, half a drachm. Powdered Rhubarb, eight grains. Compound Powder of Cinnamon, five grains. Mix them. This Powder is to be taken occasionally, as the case may require.
Vel, ℞ Magnesiæ Carbon. ʒss. Pulv. Rhei, gr. x. Aq. Menth. Pip. f. ℥iss. M. Ft. haustus.	*Or,* Take Carbonate of Magnesia, half a drachm. Powdered Rhubarb, ten grains. Peppermint Water, one ounce and a half. This draught may be taken whenever there is occasion.
Vel, ℞ Aq. Menth. Pip. ℥vij. Tinct. Gentian. ℥ss. Liquor. Potassæ, ♏xxx. M. Magnesiæ, ʒj. Ft. Mistura. Sumantur cochlearia duo media bis terve in die.	*Or,* Take Peppermint Water, seven ounces. Tincture of Gentian, half an ounce. Solution of Potass, thirty drops. Magnesia, one drachm. Of this mixture two dessert-spoonfuls may be taken twice or thrice a-day.
† ℞ Pulv. Aloës Soccotr. gr. vj. —— Zingib. gr. iij. M. Syrup. Rhamni, q. s. Ft. massa, in pilulas duas dividenda.	† Take Powder of Soccotrine Aloes, six grains. ———— Ginger, three grains. Syrup of Buckthorn, a sufficiency to form the mass, which divide into two pills.

In those cases where gout produces anomalous affections of the head, stomach, and bowels, the greatest benefit may be derived from the Bath water; and it is here a principal advantage to be able to bring by warmth that active local inflammation in any limb which relieves all the other troublesome and dangerous symptoms. Hence it is that this water is commonly said to produce the gout; by which is meant only, that where persons have a gouty affection, shifting from place to place, and thereby much disordering the system, the internal and external use of the Bath water will soon bring on a general increase of action, indicated by a flushing in the face, fulness in the circulating vessels, and relief of the dyspeptic symptoms; and the disorder will at length terminate in a fit of the gout, which is the crisis to be wished for.

The effect of the Bath waters as a medicine in erratic or wandering gout is as strongly marked as the action of any medicine can possibly be; and in the most distressing cases, which have baffled the intentions of medicine and various means at a distance, the internal exhibition of the waters has appeared to concentrate the whole gouty virus, and fix it in one point.*

In various cases of gout, especially where the high inflammation of particular limbs has gone off, and where it has left either a number of dyspeptic symptoms, or a rigidity or impaired action in the seat of the disease, an internal use of Buxton water has been recommended. As an external application in gout, it has also been found serviceable in restoring the functions to parts so diseased.

Other natural springs — as those of Vichy, in France, the chief ingredients of which are bicarbonate of soda and carbonic acid gas — are said to be efficacious in the relief of gout. And the same power is attributed to all other warm alkaline springs,—such as those of Ems, Töplitz; and even to the less alkaline mineral waters which are charged with carbonic acid gas,—as the Wildbad, Schlangenbad, &c.,—which differ more in degree than in kind. We speak on the authority of the writer in the fourteenth volume of the British and Foreign Medical Review, who concludes his notice of this part of his subject in the following words:—" Many more cases of acute than of chronic gout come to Vichy; and, if there is any difference, the waters succeed better in the acute form: in the chronic, the cure is slower. Those with erratic, anormal, irregular, or visceral gout (often the cause of many anomalous, painful, and distressing symptoms) have generally derived much advantage from these waters, with a suitable diet and alkaline drinks. The Vichy waters are contra-indicated in phthisis, and in diseases of the heart of any standing; in all cases of hæmoptysis and in dropsy: not confounding this, however, with the œdema of gout. The rheumatic and neuralgic do not frequent Vichy." The use of the baths and waters is to be followed up with the constant employment of alkaline drinks (an ounce of bicarbonate of soda in a pint of water) and a suitable diet, excluding acids, highly azotized food (such as the stronger meats), and spirituous liquors. We have already expressed our opinion that the alkaline treatment is only palliative, correcting the results of real assimilation, but not striking at the root of the evil, because not restoring the healthy action of the assimilating organs. We find a confirmation of this opinion in what is stated above.

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* See Dr. Falconer's Work on the Bath Waters. — Practical Treatise on the same, by Mr. J. H. Spry.

In severe attacks of atonic gout, some practitioners have advised the application of blisters to the lower extremities; but they ought to be avoided in those cases which are attended with much pain in the parts. Sinapisms, pediluvia, together with wine and other stimulants, have also been recommended in atonic gout for bringing the disease to the extremities. We consider sesquicarbonate of ammonia the best stimulant under such circumstances.

The greatest attention should be paid to promote perspiration and avoid cold; and this is most effectually done by warm clothing, joined to moderate exercise. A flannel shirt, with a pair of stout shoes, and thick woollen or fleecy hosiery stockings, will be necessary articles of attire for those who cannot remove in the winter to a warmer climate.

When the stomach or intestines become affected in consequence of retrocedent gout, immediate relief ought to be attempted by making the patient drink freely of wine, or even brandy, joined with aromatics. In affections of this nature, strong spirits impregnated with assafœtida or garlic may also be given with much advantage. Opiates*, joined with aromatics, or with camphor, musk,

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* ℞ Opii, gr. j.	* Take Opium, one grain.
Camphoræ, gr. v.	Camphor, five grains.
Ammoniæ Subcarbon. gr. vj.	Subcarbonate of Ammonia, six grains.
Confect. Aromat. gr. v. M.	Aromatic Confection, five grains.
Ft. bolus, pro re natâ adhibendus.	Make them into a bolus, to be taken when requisite.
Vel,	*Or,*
℞ Misturæ Camphoræ, f. ℥jss.	Take Camphor Mixture, one ounce and a half.
Ammoniæ Subcarbon. gr. x.	Subcarbonate of Ammonia, ten grs.
Tinct. Opii, ♏viij.	Tincture of Opium, eight minims.
Sp. Æther. Sulph. ♏xx. M.	Spirit of Sulphuric Æther, twenty minims. Mix them.
Ft. haustus, tertiâ quâque horâ sumendus.	Take this draught every three hours.
Vel,	*Or,*
℞ Moschi, gr. v. solve in	Take Musk, five grains: dissolve it in
Misturæ Camphor. ʒx. Dein adde	Camphorated Mixture, ten drachms. Then add
Spirit. Ammon. Aromat. ʒss.	Aromatic Spirit of Ammonia, half a drachm.
Tinct. Opii. ♏viij. M.	Tinct. of Opium, eight minims.
Ft. haustus.	Mix them for a draught.

or ammonia, may be of service. From one to four teaspoonsful of equal parts of camphorated tincture of opium and ammoniated tincture of guaiacum, in any suitable vehicle, will be a proper medicine. Æther will likewise be a useful remedy. At the same time that we administer these medicines internally, warmth should be applied externally to the region of the stomach by hot cloths, fomentations, or a bladder, or a tin bottle (known under the name of stomach-warmer,) filled with boiling water, and hot bricks wrapped in flannel must be put to the feet. Frictions with brandy, or the linimentum ammoniæ fortius, over the stomach, will also be proper. If nausea and vomiting come on, the stomach is to be relieved by taking a few draughts of wine, somewhat diluted with warm water, having recourse afterwards to opiates combined with camphor.

In retrocedent gout, where the heart becomes affected, the above means may be adopted.

If there is a translation of the disease from the extremities to the head, so as to threaten apoplexy or palsy, a large blister ought to be applied to the back, as likewise small ones to the inside of the legs, with cataplasms to the soles of the feet; and the patient must take from twenty-five to forty drops of the spiritus ammoniæ aromaticus every three or four hours, or a combination of volatile alkali, æther, and aromatics, as specified in the formulæ before given, omitting the opium. About six drachms, or an ounce of the tinctura aloes, may also be taken as a gentle purgative.

When the gout attacks the lungs, and produces asthma, blisters should be applied to the breast or back, and stimulating cataplasms to the soles of the feet, and opiates and antispasmodics should be administered internally. From twenty to fifty drops of æther may be taken every two or three hours in a glass of wine, and an opiate* may be repeated as the necessity of the occasion requires.

In this particular retrocession of gout, where the attack is so severe as to threaten suffocation, as well as where there is a translation to the head, venesection might be resorted to with advantage.

Dr. Copland calls attention to the very important fact, that, although in retrocedent gout the internal affection will often assume a nervous or spasmodic character, in weak constitutions, as indicated by the weak, or irregular, or unaccelerated pulse, and by the ease derived from pressure, yet, active congestion, or inflammatory determination, is not infrequent, particularly in more plethoric or irritable habits. Much care and discrimination, he goes on to say, are required to ascertain the presence or absence of these states; and either is to be inferred chiefly from the causes of retrocession, from the state of the pulse, and of vascular repletions, and from the tenderness, fulness, or tension and temperature of the regions containing the affected organ. If inflammatory action of the stomach, intestines, or kidneys be inferred, he recommends prompt but cautious bloodletting; and the simultaneous employment of derivatives and hot epithems. A full dose of calomel, with a few grains of camphor and two of opium, are to be administered at once, and repeated within two or three hours if there be no improvement; and equal parts of castor oil and oil of turpentine, both by the mouth and in enema, are recommended for the relief of flatulent distension and colicky pains. Local bloodletting may be practised by cupping or leeches, if necessary, after general depletion. He conceives that in some cases of a mixed character, partaking both of inflammation and of spasm, local depletion only is admissible.

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* ℞ Confect. Aromat. ʒss.
Aq. Cinnam. f. ℥jss.
Tinct. Opii, ♏xxx. M.
Ft. haustus.

* Take Aromatic Confection, half a drachm.
Cinnamon Water, one ounce and a half.
Tinct. of Opium, thirty drops.
Mix them for a composing draught.

In severe cases of a sudden translation or metastasis of gout from the extremities to any vital part—such as the head, heart, lungs, or stomach—it may be justifiable to excite a counter-irritation by the external application of linen-cloths, or of a clean metallic surface held in boiling water, in preference to a blister of cantharides, which acts slowly, and requires a lapse of some hours to produce vesication.

Where the disease attacks the kidneys, and imitates a fit of the gravel, the patient ought to keep warm fomentations, or bladders filled with hot water, constantly applied over the parts affected: he should drink freely of tepid diluting liquors: and an emollient clyster, with an addition of a small quantity of tinctura opii, ought frequently to be injected. In order to alleviate the pain, thirty or forty drops of the same tincture may likewise be taken by the mouth in any kind of vehicle.

During severe paroxysms of the gout, the treatment must be active and appropriate: after they have subsided, the remaining duty to be performed is the restoration of the healthy state of the digestive functions, and of due strength in the weakened limbs. In such cases and circumstances as do not forbid the use of steel, from too much vascular fulness and action, the ammonio-tartrate of iron may be taken advantageously in a little warm water, or compound decoction of aloes, in doses of five or ten grains thrice a day.

The gout imitates many diseases, as has already been observed; and, by being mistaken for them, and treated improperly, is often diverted from its regular course, to the great danger of the person's life; for which reason, those who have had the gout ought to pay particular attention to any complaint that may happen to take place about the time they may have reason to expect another attack of it. Those likewise who never had the gout, but who, from constitution or manner of living, have reason to expect it, ought also to be very circumspect with regard to its first approach, as, by any wrong conduct, or improper treatment, it might be diverted from its right course, and be thrown upon some vital part.

To render the recurrences of gouty paroxysms less frequent, and their attacks less severe, we may rest assured that more is to be done by temperance in diet, cheerfulness and serenity of mind, moderate exertion of the intellectual faculties, early rest, the prevention of costiveness, and by regular moderate exercise, than by any other means whatever. This plan is at the same time attended with greater safety. The exercise must be suited to the condition of the patient. Walking will certainly be the best; but if he be unable to use it, he must employ some other kind, as riding on horseback, or in a carriage. Although walking may probably be irksome at first, and the feet feel tender, yet by perseverance it will become more agreeable, and great advantage will be derived. Where no exercise can be taken, some benefit may possibly arise from frictions.

In those who have an hereditary predisposition to gout, it is certain that it may often be prevented by paying an early and strict attention to regimen, temperance, and exercise; and even after it has shown itself by a regular attack, its returns may possibly be prevented for the remainder of life: but it is only those who have sufficient resolution to observe a steady perseverance in such a course, that can have any reason to expect a cure.

Exercise in persons disposed to the gout not only strengthens the system, but tends likewise to prevent plethora. To prove advantageous, it must, however, be constant, regular, and continued through life, and should only be moderate.

While the vigour of the system still remains unimpaired, an abstinence from animal food may be entered upon with safety, in order to prevent a recurrence of the disease; but if this abstinence shall not have been adopted until the constitution has been hurt by intemperance, frequent fits, or the decline of life, it certainly will prove injurious, and may tend to bring on an irregular attack. A sudden change from a full to a spare and low diet will in all cases be highly improper; and whenever an alteration is made in the mode of living, it ought to be done in a gradual manner.

Where an abstinence from animal food is to be observed, a diet consisting of milk and the farinaceous seeds will be the most proper, and all kinds of spirituous and fermented liquors are to be avoided; but where custom or a declining state of the system has rendered them absolutely necessary, along with animal food, they are to be used with moderation.

Besides regimen and exercise, it will be necessary for the patient to observe universal temperance; he is to shun night studies, and all excess in sensual gratifications; he should go to bed betimes, and rise early; and he should avoid all exposure to cold, but more particularly getting wet in the feet. In the gout, as well as in regard to all other diseases, the cardinal rules in preserving the health are founded on temperance and exercise, on the choice of all those means which are found by the individual to invigorate the system, and the shunning whatever injures and enfeebles it.

Some persons much disposed to gout, who have been reduced to poverty, and obliged to work hard and use a low diet, have been cured thereby; which clearly demonstrates the efficacy of exercise, temperance, and a spare regimen.

RHEUMATISMUS, OR RHEUMATISM.

The characteristics of rheumatism, as assigned by Dr. Cullen, are, pyrexia, pain about the parts following the track of the muscles, attacking the knees and larger articulations, rather than those of the feet or hands, increased by external heat.

Rheumatism may arise at all times of the year; but the spring and autumn are the seasons in which it is most prevalent: it attacks persons of all ages; but very young people are more exempt from it than adults. Those whose employments subject them to alternations of heat and cold, are particularly liable to rheumatism. It is said to be hereditary, at least in the subacute variety.

The disease is usually distinguished into the chronic and the acute; being known by the former appellation when there is no great degree either of inflammation or fever present, but merely pains; and by the latter, when both fever and inflammation exist in a high degree. In common life, a threefold distinction is made, — viz. the true rheumatism, the rheumatic gout, and rheumatic fever. Chronic rheumatism, unless in some instances where it may attack the periosteum, is unaccompanied by swelling. It is the existence of more or less tumefaction near or in the joints affected that brings the case under the heads of subacute or acute rheumatism; the subacute being that variety in which the smaller joints, as especially the knuckles, are affected, and where there is only slight pyrexia, constituting the same malady spoken of above under the term rheumatic gout. Dr. Wright, of Birmingham, in a chemical lecture published in the Medical Times of June, 1847, speaks of this as the most common variety of rheumatic affection met with in practice, and notices that it is not a sequela of acute rheumatism. Rheumatic fever, or acute rheumatism, as it is indifferently called, appears in two forms,— namely, either as fibrous or capsular rheumatism. In the former the inflammation is seated in the structures in the vicinity of the joints; but is nevertheless on their outer surfaces, so that the cavities of the joints are not implicated. It is in this variety of rheumatism that the tendency of the disease to shift its seat from the neighbourhood of one joint to another, or to other membranes — as to that lining the cavities of the heart, or to that of the pericardium — is so remarkable. In these cases it is usual to have many parts simultaneously affected, and the manifestation of the malady in a new seat, though commonly, is not necessarily, attended by its disappearance in that previously occupied. Hence the necessity, in all cases, of diligently examining the state of the heart, since the persistence of pain and swelling in the limbs, is no security against an attack of the investing membranes of that organ. The abundant acid perspirations which attend this disease, and the pulse which is quick, and soft, and jerking, are very characteristic; indeed, its whole aspect is such as renders it difficult to confound it with any other. The rapidity with which the pain and swelling leaves the affected limbs, to appear elsewhere or to disappear altogether, is very striking. It is a peculiarity of this form of inflammation, as it affects the limbs, that it always terminates by resolution, never in suppuration or gangrene. This, by far the most common form of acute rheumatism, is that which is understood generally by the term rheumatic fever.

In the capsular form it is customary to have only one, or but few, of the joints attacked: there is far less of a migratory disposition, and the seat of the disease is marked by more circumscribed enlargement, due to effusion within the capsule of the joint itself, and limited by its capacity of distension. This variety of the disease is most strongly marked when occurring in the knee: it is in this joint only that we have seen it so existing as to be entitled to the epithet of acute. It does, however, occur in the joints of the hands, in which case it might be difficult to say whether it is more allied to rheumatism or gout. M. Chomel, indeed, considers capsular rheumatism and gout as identical. We have, in the article on gout, detailed the circumstances which may serve to distinguish gout from rheumatism; but it must be allowed that the diagnosis is not always easy, since the two have many points of resemblance; and individual cases of either approximate so to those of the other, that it is almost impossible to draw the line of demarcation between them. The term rheumatic gout, in common use, would seem to show that they are sometimes blended in the same case.

Although acute rheumatism somewhat resembles the gout, still in some respects it differs from it. It does not usually come on so suddenly as a fit of the gout, but for the most part gives the patient warning by a slow and gradual increase of pain. Neither is it fixed to one spot like the gout, but affects many joints at once. It seldom attacks the small joints, but is confined chiefly to the larger, as the hip, knees, shoulders, wrists, and ankles. Acute rheumatism is generally attended with a continued fever; whereas the gout has periodical remissions. Like most of the pyrexiæ, it is preceded by rigors and a sense of cold. A soft, quick, and jerking pulse supervenes; and a throbbing pain is felt in the arteries. By degrees the pain increases, and the patient suffers cruel torture, which is aggravated on the least motion. The sense of pain resembles that of a slow dilaceration of the parts, and commonly goes off by a swelling of the joint or joints. The rheumatism, moreover, is not preceded by dyspeptic symptoms, as is usually the case with the gout; neither do concretions form about the small joints and fingers, as in the latter. In some cases, however, urate of soda has been seen deposited from the perspiration on the limbs, forehead, and face of patients suffering from acute rheumatism, as well as on the joints of the body. Dr. Seymour states that he has himself seen this rare occurrence in three cases.

Obstructed perspiration, — occasioned either by wearing wet clothes, lying in damp linen, sleeping on the ground or in damp rooms, working in damp situations, or by exposure to cool air when the body has been much heated by exercise, as by coming from a crowded room or public place into the cool air, — is the cause which usually produces rheumatism. Those who are much afflicted with this complaint are very apt to be sensible of the approach of wet weather, by finding wandering pains about them at that period; in fact, some are living barometers.

Rheumatism, in its acute form at least, is now generally regarded as a blood disease; and it is believed that, in rare instances, it, like gout, may exist in a latent state in so far as that the pyrexia of rheumatism may exist without pains or affections of the joints. This is Dr. J. Taylor's view, who considers the pyrexia as independent of the inflammation of the joints, though perhaps augmented by it, but as a simultaneous effect of a common cause. The impression of cold acts as an exciting cause, but is not necessary to the production of the disorder.

The proximate cause of the acute species of the disease at least, is supposed to be an inflammation of the membranes and tendinous aponeuroses of the muscles. It has its seat in the fibrous tissues.

Acute rheumatism usually comes on with lassitude and rigors, succeeded by heat, thirst, anxiety, restlessness, and a full and quick pulse, seldom exceeding, however, 110 in the minute; the blood, when drawn from a vein, exhibits a buffed surface upon cooling, and the tongue is loaded with white fur; after a short time, excruciating pains are felt in different parts of the body, but more particularly in the joints of the shoulders, wrists, knees, and ancles, or perhaps in the hip; and these keep shifting from one joint to another, accompanied by redness and swelling in every part they occupy, as likewise a great tenderness to the touch. Towards evening there is usually an exacerbation or increase of fever, and during the night the pains become more severe, and shift from one joint to another.

Sometimes the pain is confined to a few joints; in other cases it affects many at the same time. In no disease do we meet with such remarkable instances of metastasis, or I should rather say extension of the inflammation, and no muscular part is exempted from the pain. Internal parts, as the diaphragm and heart, are sometimes affected.

In the course of the disease profuse sweating usually occurs, the secretion being of a very acid odour; but it seldom removes the pains or proves either salutary or critical; and it is somewhat singular, that the pained limbs remain dry, when a sweat is on the rest of the body. In the beginning the urine is without any sediment; but as the disease advances in its progress, and the fever admits of considerable remissions, a lateritious sediment is deposited; but neither does this prove critical. The pain is met with in every degree of violence, and it is always aggravated by motion or pressure. There is seldom much headach, nor is the face flushed; and there is little tendency to delirium. In general, there is neither nausea nor vomiting; but the bowels are usually costive. The occurrence of delirium, according to Dr. Watson, generally indicates that the heart has been attacked.

According to some authors, rheumatic fever, like continued fevers, and the exanthemata, has a definite course and limited duration of about three weeks, at which time it tends to a natural termination. All this, however, is very doubtful, since the instances are but few in which the disease is left to the efforts of nature alone, uninfluenced by treatment. Our experience convinces us that it is more amenable to remedies, or, at least, more liable to be cut short by them, than any of the maladies just spoken of. Others, however, hold an opposite opinion, considering it a very intractable disease. There is seldom any peril to life except when internal organs become affected, and even then a fatal event is rare; or when excessive depletions have been employed. Many cases, however, are on record, in which the doctor seems to have been much more dangerous than the disease. The affections of the heart which owe their origin to this malady, adhesions of the pericardium, morbid deposits on the mitral and aortic valves, involving, as they do, farther alterations (as hypertrophy and dilatation) of its structure, and ever-increasing disturbance of its functions, are to be dreaded scarcely less than death itself. To many sufferers from these sequelæ, no prospect is open but that of dragging on a miserable and distressing existence for a few years, during which they are disqualified for any active pursuit either of profit or pleasure; and of making progress only in wretchedness, till they sink prematurely into the grave.

Chronic rheumatism is attended with pains in the head, shoulders, knees, and other large joints, which at times are confined to one particular part, and at others shift from one joint to another, without occasioning any inflammation or pyrexia; and in this manner the complaint continues often for a considerable time, and at length goes off, leaving the parts which have been affected in a state of debility, and very liable to fresh impressions on the approach of moist damp weather.

Chronic rheumatism may affect either the muscles, in which case it is believed to be the membranous tissue involved in them, rather than the muscular fibre, which is the seat of the malady; or it may appear in the periosteum, when it more nearly resembles the pains of secondary syphilis. Pain on the contraction of the muscle in the former case, gnawing pain and tenderness on pressure in the latter, are the chief features of these two varieties of rheumatism; we believe that it is not unusual for them to coexist.

The principal thing to be attended to in the treatment of acute rheumatism, is to obviate the general inflammation which prevails; and this is to be effected by strictly pursuing an antiphlogistic regimen, and by blood-letting in cases where the vascular action is strong, the constitution robust, and the heat considerable; proportioning the quantity we take away to the violence of the symptoms, and the age, strength, and habit of the patient. If the pains continue very severe, and the pulse full, hard, and quick, after bleeding to the extent of twelve or sixteen ounces, and the blood appears cupped and very sizy on becoming cool, we may with great propriety repeat the operation either on the same day or the next; but this mode of proceeding should be adopted only at an early period of the disease. The reduction of vascular action is, however, more particularly to regulate the repetition, than the buffy appearance of the blood, which in many cases continues to increase, notwithstanding the abstraction of blood, and is not diminished by bleeding. This circumstance should be attended to. The proportion of fibrin is generally increased in blood taken during the height of rheumatic fever.

In weak irritable habits, where no great degree of general inflammation prevails, and little or no fever attends, and where the inflammation is chiefly local, or the pain not violent, topical bleeding, by means of several leeches applied to the part affected, may be substituted instead of using the lancet, and will often be found to afford essential relief. Moreover, they are not attended with the risk of causing translations of the disease. They may likewise be used with benefit where much inflammation prevails in the system, as well as in particular parts, provided that some general bleeding has been premised or adopted. When leeches cannot be procured, scarifying and cupping may be employed in their stead.

It has been usual in acute rheumatism to rely principally on large and repeated bleedings at an early period, joined with an antiphlogistic regimen; and no doubt this evacuant plan of treatment has in some cases been carried to excess, and produced an alarming degree of debility. Having reflected much on this circumstance, and well considered the wonderful power which the digitalis possesses of diminishing the action of the heart and arteries, I have employed it in some severe cases of acute rheumatism after one or two bleedings from the system, and with much apparent advantage; for I found that its use rendered any further repetition of venesection unnecessary. In the instances to which I allude, from ten to twenty drops of its tincture were given every four or six hours.

We have been unwilling to exclude from our account of the details of treatment, the mention of general blood-letting to a moderate, if not to a liberal, amount, under suitable circumstances. Nevertheless, we must declare that our own convictions are opposed to its employment. In our own practice, in cases of rheumatic fever, which has been rather extensive, bloodletting has scarcely ever been resorted to, and the fluctuations of opinion so frequent in the medical world have caused it to fall very generally into disuse at the present time. Granting that rheumatic fever is a disease of an inflammatory character, it has become manifest to the common sense of medical practitioners, that all inflammations are not identical, and that the lancet is not so potent an instrument for good, even in those forms of inflammation which are most amenable to its power, as it was at one time considered to be. A belief in the influence of venesection in the prevention of inflammation, has now, we think, given place to sounder views, so that few or none would bleed a patient with the purpose of protecting organs not as yet implicated in the disease; nay, we find able advocates of the opinion that large depletions increase the probabilities of an attack upon the heart. Whatever may be the case in other ranks of society, in a rural population, or in other countries, there appears little reason for supposing that the complaint, as it is so commonly met with in the patients of our metropolitan hospitals, is caused or nurtured by undue plethora, or that the subjects of it can bear unharmed any considerable abstraction of blood. As regards the application of leeches our objection is, that it is futile to address a local remedy to the relief of a constitutional disease; that the parts affected are often too numerous, and too extensive to admit of palliation by these means; and that it is useless thus to attack the enemy in a position from which it may be shifting at the very time that our resources are directed against it. When it has fixed its seat in or near some one joint, there seems more chance that the local abstraction of blood may eradicate instead of only moving the disorder.

The treatment which we have adopted in numerous cases of rheumatic fever, with sufficient success to induce us to continue and recommend it, consists in the free employment of purgatives, generally acknowledged to be useful, and the administration at the same time of alkaline absorbents and colchicum. Thus two or three grains of calomel, with as many of powdered ginger, and twelve or fifteen of jalap are given on alternate mornings in any suitable vehicle, as honey or treacle; while a draught containing fifteen grains of carbonate of magnesia, and fifteen minims of tincture of colchicum, suspended by means of mucilage in any pleasant fluid, as cinnamon water, is ordered three times a day. Where, as is often the case, the nights are without sleep, ten grains of Dover's powder may be administered at night in addition, and continued as long as required. Some benefit has occasionally appeared to arise from the use of a warm bath of moderate temperature, the perspirations becoming subsequently both less profuse and less acid; one bath at all events will be indicated for individuals who have not habitually attended to the condition of the skin. We have not made extensive trials, but are disposed to expect advantages from making the water of the bath slightly alkaline by means of soda. During the height of the disease, fermented liquors and meat should be interdicted altogether, the patient being confined to farinaceous food and milk. Under this treatment we have found that in the course of three or four days the pains abate, or disappear altogether;

especially if the colchicum has produced irritation in the stomach or bowels, as indicated by vomiting, or purging, or by both. Where this is the case, the colchicum and purgative should be omitted, and the draught continued with magnesia alone, under the use of which the affection of the bowels will gradually subside. We are not advocates for its sudden arrest by means of chalk mixture and opiates in ordinary cases; but where it is excessive these must be resorted to: yet if the case be watched from day to day, the timely omission of the colchicum will generally prevent all occasion for their use. It will happen, in some instances, that although the colchicum gives rise to the inconveniences of which we have spoken, yet the pains and swellings remain considerable. When this is the case we have sometimes persevered in the use of the tincture of colchicum in a diminished dose, viz. in that of ten minims, and given it in chalk mixture either twice a day, or with the same frequency as before. Where nausea or vomiting have been produced by it, while yet the bowels were quiet, and the pains unremoved, we have found ten minims of the tincture, given in equal parts of the compound decoction of aloes and pimenta water (say half an ounce of each) twice a day, so well borne by the stomach as to allow of its continuance till the rheumatism had yielded to its influence. Where, as is sometimes the case, the pains have been almost removed, without any irritative action of the colchicum, we have sometimes continued it for a time, either less frequently or in diminished dose, while the diet of the patient has been improved by the allowance of a little fish, or of boiled mutton. We make it a rule to avoid sudden transitions in treatment: our first object is to remove the active disease, but we trust to a tonic treatment to fortify the system against relapse; yet we seldom or never improve the diet and resort to tonics at the same visit. When there are lingering pains after the swellings and pyrexia have disappeared, we are wont to make some addition to the diet, while the colchicum is continued for a day or two longer. If the pains have been completely removed, we give three to five grains of sesquicarbonate of ammonia, in compound infusion of gentian or decoction of bark; or, instead of ammonia, sesquicarbonate of soda in double amount may be used. The bowels should, at the same time, be regulated by some simple aperient, as five or ten grains of compound rhubarb pill, or cathartic extract. We consider the bark the more effectual of the two medicines just named, but in some cases it does not agree, and seems to cause a relapse; and we have heard Dr. Chambers make a remark to the same purport. We have occasionally exhibited colchicum in the tonic draught. When the tonic has been taken for a few days, we make additions to the diet; or in the case where this has been first charged, we drop the colchicum and resort to tonics when the pains have disappeared. If the disease pass into a chronic state, others of the remedies recommended for that form of disease may be resorted to. In some individuals the constant return of pain on the allowance of a meat diet has seemed to require continued self-denial in this respect; with all patients the indulgence of fermented liquors should be withheld till convalescence is fully established.

Should endocarditis or pericarditis supervene, that is, inflammation of either the membrane lining or covering the heart, it will be recognised and require to be treated in the manner mentioned under those heads. We have already intimated the necessity of a frequently repeated and careful examination of the region of the heart in cases of rheumatic fever, with a view to the detection of any mischief as soon as it may occur. There is an additional reason for making such an examination at the commencement of our attendance on each case, since a certainty of the absence of all abnormal sounds and conditions at the beginning will prove conclusively that those subsequently observed are of recent origin, and justify measures that it would be useless, and therefore hurtful, to employ, against such as might be of long standing. That such knowledge, where it is attainable, will be of great service to the physician, appears from the remarks of Dr. Taylor, in his very able paper on the causes of pericarditis, published in the 28th volume of the Medico-Chirurgical Transactions. He there observes that "in a great number, perhaps in most, of the cases, the heart disease is of older standing than the rheumatism, and in many of the rest, the duration of the valvular disease is uncertain; for in *most* instances in which physical signs are observed when the patient is first examined, we have no means of distinguishing whether the valvular disease be old or recent." In a note at p. 495., which a little precedes the passage just quoted, he establishes the frequent occurrence of valvular murmurs of old standing in cases quite unconnected with existing rheumatic fever, and renders it probable that valvular murmurs in rheumatic fever (unless it be ascertained that they have commenced during, or only shortly before, its appearance) are indications of recent endocarditis in somewhat less than one fourth of the cases in which such murmurs are to be found. From the calculations of this author, it appears that recent endocarditis is liable to occur in chronic rheumatism also, with about two thirds the frequency with which it is found in the acute disease. Dr. Corrigan, of Dublin, has revived a plan of treating rheumatic fever, of the merits of which we cannot speak from personal experience, but which we are unwilling to leave unnoticed, in consequence of the commendation that it has received. It consists in the very free use of opium, following a single, rather copious, abstraction of blood from the arm. This having been premised, opium is given in divided doses, to the extent of ten or fifteen grains a day, with the effect, as we are told, of relieving pain, and producing a subsidence of all the symptoms, the curative action of this drug appearing to depend upon the production of a healthy diaphoresis.

One fact we would press upon the attention of our readers, namely, that we have seen not a few patients of other physicians and our own, recover from severe attacks of rheumatic fever, under no other treatment than such as consisted in confinement to bed, a diet of farinaceous slops, and the ordinary dose of saline mixture (liquor ammoniæ acetat.) taken thrice a day, with perhaps an occasional aperient, if the bowels were sluggish, and some mild narcotic, as five grains of Dover's powder, if the nights were restless. We do not say that all cases of rheumatic fever will get well under this simple treatment; but we do say that we have seen many, of no slight severity, improve as promptly and steadily, and convalesce as rapidly under this as under much more vigorous remedies. To us, therefore, Dr. Corrigan's opiate plan seems far too heroic; to us, too, the mercurial plan of St. George's * and St. Bartholomew's, though the former enjoys the now distinguished eulogies of Dr. Hope, is open to the same objection; and, most of all, the bloody treatment of M. Bouillaud, now generally condemned, and always irrational. Then there is the treatment by nitrate of potash, as pursued by M. Gendrin, who puts his trust in this medicine, exhibited to the extent of one or two ounces daily, in divided doses, and dissolved in a large bulk of water, as one or two quarts at least; and then there is the more operose treatment of Dr. Basham, who uses the same salt only as an adjunct of other remedies (such as calomel, opium, antimony, and colchicum), stating, emphatically, that its employment is not intended to supersede the use of these when indicated.* This author has shown that one, two, even three ounces of the nitrate may be taken in the twenty-four hours in cases of acute rheumatism, and, in the majority, without producing any obvious effect on the force or frequency of the pulse, the integrity of the digestive functions, the state of the abdominal organs, or even upon the quantity of urine excreted. Free sudoresis is perhaps the most frequent apparent effect, but in many cases in which this salt was employed alone in large doses, and in which no very great increase in the perspirations was noticed, the symptoms of acute rheumatic inflammation were mitigated in a remarkably short time.†

The nitrate, we are told, is advantageously applied to inflamed joints, in the form of powder dusted over moistened sponge, which is to be kept constantly and closely applied to them.‡

We grieve to detract from the glories made known in this *currus triumphalis potassæ nitratis*, enhanced as they are by analyses of the blood which seem to show that the nitre restores deficient saline matter to that fluid, though whether of the proper kind we are not told, while the other means reduce the excess of fibrin; but we prefer to form our judgment not upon the correction of these physical changes in the blood, which make only a part of the phenomena of the disease, but rather upon the entire results candidly given *, from which we gather that in seventy-nine cases of acute rheumatism there were eighteen of cardiac disease and three deaths, while the average duration of symptoms from admission to convalescence in the seventy-six patients that recovered was 31·9 days. We confess that in no one of these results do we see anything to recommend, or even to justify, so elaborate treatment; and we fall back upon the hope, not that our feeble voice, but that the influence which the doctrines of Hahneman have exercised, and are exercising upon the community at large, and upon the thoughtful among medical practitioners also, will lead these last to make trial how gentle means will suffice for the removal of disease, and not to seek under what accumulation of remedies the patient may get well.

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* Medico-Chirurg. Trans. xxxii. p. 8. † Ibid. pp. 5, 6.
‡ Ibid. p. 11.

Dr. G. O. Rees has introduced the treatment of rheumatic fever with lemon juice, of which an ounce may be given, at first every four hours, and then less frequently, or in smaller dose, as the symptoms abate.

Of this remedy we cannot speak from our own experience, having never made trial of it in the early and acute form of the complaint. We have been told that the tongue cleans readily under its use, but we have no data whereby to compare its efficacy with that of other methods. In smaller doses it has sometimes seemed beneficial in the subacute and chronic forms. Both it and the citric acid may occasionally afford relief in cases intractable to other remedies, but we see no reason to hail it as a panacea, or to concede to it a general superiority over such as have been longer known and trusted.

Sweating is an evacuation which is resorted to very generally both in the acute and chronic rheumatism, and in many instances with very essential benefit; but it has its inconveniences, for sometimes it comes out freely without producing any good effect, and when long continued, it relaxes the skin, and makes the patient very susceptible of cold afterwards.

In the early stage of the disease it is desirable to procure perspiration by diaphoretics of the antimonial kind, or the compound powder of ipecacuanha joined to saline medicines; and in some cases material relief has been obtained thereby. A sudorific treatment however, is not to be pursued to the extent of producing great exhaustion; nor is it likely to be beneficial when all pyrexia has disappeared; at least relaxing sudorifics, heaping up colliquative sweats, are not suited to such a condition.

Opiates combined with camphor are given by many practitioners in acute rheumatism; but such a compound is not likely to prove efficacious; and the best way of administering opium in this disease, when the pain is considerable, is by using the pulvis ipecacuanhæ compositus, as has just been mentioned, or by giving it combined

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* Medico-Chirurg. Trans. xxxii. p. 13.

with antimony.* Other narcotics, such as conium, hyoscyamus, aconitum, and digitalis, are sometimes employed with seeming advantage after the bowels have been freely evacuated.

The practical objection to the use of the preparations of conium and hyoscyamus, is that, even in the present day, their strength is so uncertain, that we are never sure that a moderate dose will not prove inert, or a larger one poisonous. We owe to Dr. Fleming the revival of the use of aconite. Since the publication of his book, its medicinal employment has proved fatal in one instance, namely, that of the late Dr. Male of Birmingham; and as, in this instance, we cannot attribute the unfortunate event to an excessive or imprudent use of the remedy, we find in it an interdict against its internal administration. As an external application, where there is no abrasion of the skin or other breach of surface, the tincture, as an adjunct to liniments, or even alone, may be employed with much advantage, and without danger, for the relief of pain. We shall ever protest against the use of digitalis for depressing the action of the heart, believing, as we do, that this result is never obtained without peril to the patient, and that it is often sought when not legitimately indicated.

A peculiar mode of treating acute rheumatism by a liberal and early use of cinchona bark has been recommended by a late celebrated reader of Lectures on the Practice of Physic.† He informs us, in his Third Dissertation on Fever, that for the last fifteen years he has entirely left off bleeding in this disease, and that he has not lost above two or three patients, although he treated several hundreds who laboured under it in this way; and he adds, that when he practised bleeding largely in acute rheumatism, metastases were very apt to take place, and to destroy the patient; which accident had rarely happened since he discontinued its use. This only shows, however, that bark is better than bleeding.

Another advocate for a very early use of the bark of cinchona in

† Dr. George Fordyce.

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* ℞ Pulv. Antimon. gr. ij.—iij.
Opii, gr. ss.
Confectionis Rosæ, q. s. M.
Ft. pilula, 6tâ quâque horâ sumenda, cum haustu salino communi.

Vel,

℞ Liquor. Ammon. Acetat. ʒiij.
Aquæ Menth. Virid. f. ℥j.
Vini Antimon. Tart. ♏xv.
Tinct. Opii, ♏xx.—xxx.
Syrup. Simpl. f. ʒij. M.
Ft. haustus, horâ somni adhibendus.

* Take Antimonial Powder, from two to to three grains.
Opium, half a grain.
Confection of Roses, a sufficiency to form these into a pill, which is to be taken every six hours, washing it down with the common saline draught.

Or,

Take Solution of the Acetate of Ammonia, three drachms.
Mint Water, one ounce.
Wine of Tartarized Antimony, fifteen minims.
Tincture of Opium, twenty to thirty minims.
Common Syrup, two drachms.
Mix them, and give this draught at bed time.

this disease, is Dr. Haygarth, who tells us† that, for several years, his usual method of treating acute rheumatism has been to give either the antimonial powder or tartarised antimony, generally the former, till the stomach and bowels are sufficiently cleansed; and, without waiting for any abatement either of the inflammation or of the pyrexia, to order the cinchona bark, at first in small doses, and if they succeed, gradually in larger; but if it disagrees in any respect, or does not produce manifest relief of the symptoms, the bark is suspended, and the antimony again repeated till it shall have produced sufficient evacuations. After cleansing the stomach and bowels a second time, he administers the bark again, at first sparingly, and then more freely.

Our author assures us that, with the exception of a very few cases, bark has uniformly produced the most salutary effects. The pains, swellings, sweats, and pyrexia manifestly and speedily abated, till health was perfectly restored. But this mode of treatment, he observes, being directly contrary to medical theories, even successful experience by the most learned and sagacious physicians has not yet prevailed against established doctrines, and the practice is but partially adopted.

By most physicians the use of cinchona bark during the inflammatory state of acute rheumatism has been disapproved of; and it is only after this has been subdued by antiphlogistic remedies that its use has been thought proper.

Since the first edition of this work was submitted to the public, I have been much in the habit of administering the cinchona, joined with nitre*, in acute rheumatism, and generally with a very happy effect. I would therefore recommend this combination of medicine at an early stage of the disease, in preference to the bark separately; but I do not advise the use of it, even in this way, until the inflammatory symptoms have been somewhat counteracted by the antiphlogistic remedies which have been pointed out. Where there are intermissions of pain, a clean and moist tongue, a perspiring skin, and a lateritious sediment in the urine, the use of cinchona bark is clearly indicated, and should no longer be delayed. In some cases I have of late employed it with much

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† See Dr. Haygarth's Clinical History of Acute Rheumatism.

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* ℞ Pulv. Cinchonæ, ʒss.

Potassæ Nitratis, gr. x. M.
Ft. pulvis, 4tis horis repetendus.

Vel,

℞ Decoct. Cinchon. f. ℥jss.

Potassæ Nitratis, gr. xij. M.
Ft. haustus.

* Take Powder of Peruvian Bark, half a drachm to one drachm.
Nitrate of Potass, ten grains.
Mix them, and repeat this powder every four hours.

Or,

Take Decoction of Peruvian Bark, one ounce and a half.
Nitrate of Potass, twelve grains.
Mix them for a draught, to be taken as frequently as the former.

benefit combined with the oleum terebinthinæ.* Sulphate of quinine would probably agree better.

Dr. Hamilton, of Lynn Regis, informs us, that in those cases of acute rheumatism where blood-letting and sudorifics have been pushed as far as may be thought prudent, without being productive of the desired effect, and where a sufficient remission cannot be obtained, so as to give the cinchona bark, very great benefit is often to be derived from a use of the chloride of mercury combined with opium; which combination he has frequently employed in the proportion of from five grains to one of the former, and from one to one-fourth of the latter, according to the age and strength of the patient; and administered every six, eight, or twelve hours, as the degree of inflammation, or the threatening aspect of the disorder, seemed to require. Along with this remedy he enjoins a plentiful dilution with barley-water, or any other weak tepid beverage. According to Dr. Alison, however, no reliance whatever can be placed in the specific influence of mercury over this inflammation.

In acute rheumatism the patient must be kept on a cool spare diet, as milk, whey, buttermilk, light vegetable matters, panado, ripe fruits, &c.; animal food, either in substance or broths, and fermented liquors of all kinds, should be avoided.

In acute capsular rheumatism occupying a large joint, as the knee, it will be found that there is little tendency in the disease to change its point of attack, little or none to affect the heart or its membranes; the membranes of the brain being more likely to suffer if any internal organs are brought under its influence. Here the complaint is to be combatted in the situation in which it has fixed itself. Moderate purgation and diaphoretic remedies should be employed at first, for the purpose of improving the secretions of the digestive organs and skin, and of abating pyrexia; they will have little effect upon the local mischief; this must be treated by free and repeated leeching, as by the application of six or eight leeches, on alternate days, with soothing fomentations or poultices, intermediately; while the pain and constitutional irritation may be further allayed by Dover's powder, given in ten-grain doses at night, so as to secure that best of all restoratives, sleep. The leeching should be continued till considerable abatement of the pain and tenderness has been obtained. It is alone inadequate to their complete removal, or to procuring absorption of the fluid by which the joint is distended; for this purpose we have found counter irritation most effectual, and the best means of inducing

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* ℞ Decoct. Cinchonæ, f. ℥jss.	* Take Decoction of Peruvian Bark, one ounce and a half.
Pulv. ejusdem, ℈j.	Powder of the same, one scruple.
Ol. Terebinth. ♏xv.—xxv. M.	Oil of Turpentine, fifteen to twenty-five minims.
Ft. haustus, sextis horis adhibendus.	Mix them, and give the draught every six hours.

this effect is the employment of an ointment consisting of equal parts of the strong mercurial and tartar emetic ointments carefully applied or rubbed in once or twice a day over the swollen joints in the spaces between the recent leech bites. In this way we shall soon produce external pustulation, which may be severe if the ointment has touched the punctures, but is generally attended by some gain as respects the condition of the limb. The artificial soreness must be soothed, for a few days, by light and soft poultices, when, if need be, the ointment may be re-applied; and thus, by alternate poulticing and rubbing, the joint will be restored to a state of almost perfect soundness. The ointment here recommended, we believe far surpassing in efficacy either blisters, or moxa, or the more modern applications of iodine, whether in ointment or tincture. In a still more advanced stage, the covering the knee with leather smeared with the linimentum hydrargyri compositum, made to press gently and equally over the whole surface of the joint by means of straps of adhesive plaster, as practised by the late Mr. Scott, will be of great service. While we are pursuing this local treatment, the impaired health of the patient, as resulting partly from the disease, and in part also from the necessary depletions, will require or be benefitted by a diet and medicines calculated to support the general strength. Hence animal food should not be forbidden, while sarsaparilla bark or quinine may be given medicinally. We put no trust in colchicum in these cases; nor much in iodide of potassium; but think the last sometimes deserving a trial in conjunction with tonics: the specific action of mercury should not be induced; nor have constitutional means appeared availing, except in improving the general health.

A different mode of treatment from what has been advised in acute rheumatism must be adopted in the chronic species. Here bleeding from the system will neither be necessary nor proper.

Where the ligaments and membranes of the joints are the peculiar seat of the disease, or an enlargement of the extremities of the bones has taken place, the first attempt at relief, especially in young and vigorous subjects, should be by leeches. When the pain and irritation are abated by repeated leechings, blisters and other counter-irritants, as the tartar emetic, or compound iodine ointment, or the tincture of iodine may be tried with advantage, or croton oil may be rubbed over the part, and, in extreme cases, issues, setons, or moxas, may be resorted to.

In milder cases it will be advisable to rub the parts which are the seat of the disease several times a day with some rubefacient liniment, after which they are to be enveloped in flannel. The regular use of a flesh-brush may be requisite in cases of long standing, and where there is any rigidity in the parts.

Exercise will be highly important, and none will answer better than walking; and although it may prove a little irksome at first in some cases, still by perseverance much benefit will soon be experienced. The want of exercise is apt to induce stiffness in the limb. If, however, exercise increase local heat and pain, it must be discontinued for a time.

If the pains are of a recent date, and chiefly attack the muscles and thin membranous coverings, occasionally shifting from one part to another, and the strength is at the same time but little reduced, there can be no doubt that a moderate use of the warm bath may be serviceable; but where it proves unsuccessful after two or three trials, it ought to be discontinued. In soothing pain, relaxing the stiffened joints and rigid fibres, particularly in elderly patients, whose strength has been much reduced by the length and violence of the disorder, a bath of from 90° to 110° will often prove a useful auxiliary to the other means we employ.

This remedy, however, may, I think, be considered of inferior value in the cure of rheumatism, when compared with the topical and sometimes general use of hot water in the form of vapour. Whenever the joints are very rigid, and the pain upon motion exquisitely severe, or where the muscles have become contracted and almost paralytic, and indeed in all protracted cases of the disease of the hip-joint, lumbago, or sciatica, the vapour of hot water, locally and properly applied, will seldom fail, in conjunction with other proper topical applications, to prove a safe and successful remedy. The mode of applying it must be regulated according to circumstances. A large boiler with a pipe affixed to it forms a simple apparatus. With this the parts affected may be steamed for about half an hour at a time, repeating the process two or three times a-day.

In cases of chronic rheumatism where great debility prevails, with deep-seated pain, the warm bath frequently renders the patient hot and restless, and seldom relieves, unless it induces sweat. Now the advantage of the vapour-bath is, that perspiration takes place at a much lower temperature in it than in the other: the vapour-bath need not be heated above 96 degrees to produce a salutary perspiration; whereas a warm bath seldom produces this discharge at a lower temperature than 100 degrees, and from that it is used up to 112 in some of the hot springs at Bath.

After exposing the diseased parts for a due length of time to the action of vapour, shampooing them according to oriental custom, and diligently rubbing in some rubefacient liniment, we may immediately after employ electricity, either in slight shocks, or by drawing sparks. Perhaps the latter may be the preferable way. The process being completed, the parts are then to be enveloped in flannel.

Dr. Bardsley, in his Medical Reports, mentions, that he has seen, at the Manchester Infirmary, several hip cases of long standing yield to the persevering use of topical bleeding by means of cupping and scarifying, with the aid of issues; but in order to remove the rigidity and want of tone which remained in the parts after the subsidence of the more violent symptoms, he was obliged to have recourse to the aid of vapour and electricity. In some very obstinate cases of sciatica, which resisted all other means of relief, he has also witnessed the happiest effects from issues; but he observes that he often found it necessary to surround the joints with several of these drains, moderating the degree of irritation and discharge according to the obstinacy of the disease and the strength of the patient.

The chronic rheumatism, in all its forms, succeeding to the acute, and where the inflammation has been chiefly seated in moving parts, is often wonderfully relieved by bathing in the Buxton waters; and the healthy action is soon so far restored as to enable the patient to use the more powerful remedy of sea-bathing, or the common cold bath. On account of the slightness of the shock of immersion, very delicate and irritable habits, and especially parts weakened by disease, can generally bear this degree of cold, and overcome it by a very small reaction, to produce which appears to be often a most salutary effort of the constitution. Hence the Buxton bath is become almost a technical term for any bath heated to the highest degree that is compatible with giving some sensation of cold when the body is first plunged in it.

The power of the Bath waters is chiefly confined to that species of rheumatism which is unattended by inflammation, or in which the patient's pains are not increased by the warmth of his bed. In all such cases, both bathing and pumping are very appropriate remedies, and where the joints have become stiffened, they will be likely to prove highly beneficial.*

Cold bathing has been advised by some physicians, while others again have disapproved of it. In some instances it has certainly proved very beneficial. The cold bath is a stimulant, and promotes perspiration; and by strengthening the body, prevents a relapse. While there are any febrile symptoms it should not be used.

The shower bath, with subsequent frictions and warm clothing, will be found not only a successful means of cure in many cases of chronic rheumatism, but also a very effectual preventive.

Blisters are sometimes employed in this complaint; but they seem to be most serviceable in those cases where the pain is fixed in any particular joint. With respect to the mode of their application, it seems proper to observe, that a repetition of fresh blisters will be far preferable to keeping up a constant sore by stimulating ointments.

Acupuncturation (punctures made with needles) has been tried, and with complete relief, in some instances of severe rheumatic pain occupying a fleshy part, such as the deltoid muscle. Before the pain has completely disappeared, it has, however, on some occasions, been necessary to introduce the needles every third or fourth day, for six or seven times. The operation is attended with but little pain if performed by a skilful surgeon; yet it does not appear to be much resorted to in the present day.

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* See Dr. Haygarth's Observations on Rheumatic Fever; Practical Treatise on Bath Waters, by Mr. J. H. Spry; and Dr. Falconer's Treatise on the same Waters.

The cod liver oil is a medicine which formerly enjoyed an extensive popular reputation, more especially in Lancashire, and its use in this disease has been revived at the same time that it has found many new applications. It may be taken to the amount of one, two, three teaspoonfuls, or more, in milk, or floating on any bitter infusion or aromatic water, or in beer, or wine and water, where these are not contra-indicated, or again, with lemon juice and water. The nausea which it generally causes at first, is often overcome by persistence or variation of the vehicle, and then it may prove serviceable. Where the distaste is permanent and invincible, little advantage can be expected from it.

Dr. Barlow, in the article Rheumatism, of the Cyclopædia of Practical Medicine, very properly insists upon the fact, that some amount of inflammatory action may attend cases of rheumatism which, from their long duration, are termed chronic. This, no doubt, frequently happens where the muscles or nerves are the seats of the disease. Here there is no swelling which we have taken as the best characteristic of the subacute and acute forms. We perfectly agree, therefore, with this author in condemning the indiscriminate use of stimulating remedies, on the ground that the malady assumes a chronic aspect; we do not, however, go along with him in thinking that blood-lettings, even to a small extent, as six or eight ounces, to be repeated from time to time to a somewhat increased amount, are either requisite or desirable. Cupping on the loins is of much service in lumbago, leeching may be requisite where the deltoid is affected, and either of these means of abstracting blood locally should be employed over the course of the sciatic nerve when inflammation is indicated by continued pain and tenderness. As regards the general treatment, that recommended in acute rheumatism may be employed with somewhat diminished energy. We have seen much relief afforded in some cases of chronic muscular rheumatism by the use of a pill taken night and morning, or thrice a day, consisting of a twelfth part of the mass made up of one grain of tartar emetic with twelve of the powder of the cormus of colchicum and half a drachm of extract of conium. The bowels should, at the same time, be occasionally acted upon by common salts, or salts and senna, while fermented liquors must be interdicted and plain meats be used with moderation. A saline draught, with the sixteenth of a grain of tartarised antimony and six or eight drops of the tincture of colchicum, may be used instead of the pills. Where the liver appears torpid, cathartic extract with calomel and antimonial powder may be employed as recommended by Dr. Barlow.

When the inflammatory action is subdued, tonics, as bark, quinine, and the compound decoction of sarsaparilla, are proper remedies. Sometimes, however, intermediately between these two sorts of medicine, magnesia with sulphur, to the extent of twelve grains of each, will be found of use; or a powder consisting of eight grains of guaiacum, and as much nitre, and ten or twelve of sulphur, may be given in treacle, twice or thrice a day, in this stage of transition.

These are the principles of treatment, and chief remedies that we have been accustomed to trust to in the form of chronic rheumatism in which some degree of inflammation is supposed to be present; being the variety which has by some, as by Dr. Elliotson, been termed hot, in contradistinction to the other, or cold; to which last, alone, is the stimulating treatment appropriate.

The internal remedies which have been most generally recommended in chronic rheumatism are sudorifics and medicines of a stimulating nature, which abound in essential oils and resins; and, therefore, volatile alkaline salts, guaiacum, turpentine combined with cinchona, and the like, may be administered as in the undermentioned formulæ.* In the most aggravated instances of this

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* ℞ Ol. Terebinth. f. ʒjss. Vitell. Ovi, q. s. Dein adde Spirit. Junip. Comp. f. ℥j. Decoct. Cinchon. f. ℥v. M. Ft. mistura, cujus sumat cochl. larg. ij. quartâ quâque horâ.	* Take Oil of Turpentine, one drachm and a half. Yolk of Egg, a sufficiency to mix them. Then add Compound Juniper Spirit, one ounce. Decoction of Bark, five ounces. Of this mixture, two table-spoonfuls may be taken every fourth hour.
Vel,	*Or,*
℞ Tinct. Guaiac. Ammoniat. f. ʒj. Spirit. Cinnam. f. ℥ss. Decoct. Cinchon. f. ℥j. Vini Antimon. Tart. ♏xvj. M. Ft. haustus, bis terve die sumendus.	Take Ammoniated Tincture of Guaiac. one drachm. Spirit of Cinnamon, half an ounce. Decoction of Bark, one ounce. Wine of Tartarised Antimony, sixteen minims. Mix them for a draught, to be taken twice or thrice a-day.
Vel,	*Or,*
℞ Tinct. Guaiac. Ammoniat. f. ʒj. pro dos. in quovis vehiculo.	Take Ammoniated Tincture of Guaiac. one drachm for a dose. In any vehicle.
Vel,	*Or,*
℞ Gum. Guaiac. ℈j. Ammoniæ Sesquicarbonat. gr. x. Confect. Rosæ, q. s. M. Ft. bolus, mane et vespere adhibendus.	Take Gum Guaiac. one scruple. Sesquicarbonate of Ammonia, ten grains. Confection of Roses, a sufficiency to form a bolus, which may be given morning and evening.
Vel,	*Or,*
℞ Gum. Guaiac. gr. xv. Pulv. Antimonial. gr. ij. Confect. Opii, gr. x. Syrup. q. s. M. Ft. bolus.	Take Gum Guaiac. fifteen grains. Antimonial Powder, two grains. Opiate Confection, ten grains. Syrup, a sufficiency to make them into a bolus.

species of rheumatism, where great torpor and debility prevail, guaiacum, in as large doses as the stomach will bear, often proves a powerful remedy, when aided by topical applications. The ammoniated tincture of this medicine, joined to a strong decoction of cinchona, often proves serviceable in very obstinate cases. Internal medicines, however, without the aid of the external means before noticed, will seldom or never effect a cure in severe and obstinate cases of chronic rheumatism.

Calomel and other preparations of mercury have been given in this disease along with the decoctum sarsaparillæ compositum; but they seem best adapted for those cases where we suspect it to be connected with a syphilitic taint. In palliating symptoms, and allaying pain and irritation, small doses of the antimonial powder and opium, combined with the chloride of mercury, sometimes prove useful.

If in the course of the disease the patient's rest should be much disturbed throughout the night by the severity of the pains, an anodyne draught may be ordered for him, to be taken at bed-time*, or we may prescribe from ten to fifteen grains of the pulvis ipecac. compos., or from a quarter to half a grain of acetate or hydrochlorate of morphine may be given instead.

Where opium disagrees with the patient, other medicines of the narcotic class, as conium and hyoscyamus, have been administered in chronic rheumatism.

In this species of rheumatism it will be absolutely necessary to persevere for a considerable length of time in the use of whatever medicines we employ, otherwise but very little benefit can be derived from them.

To obviate costiveness, some gentle purgative, such as a solution of the sulphate of magnesia in a decoction of senna, should be taken occasionally during the continuance of the disease.

Where the different combinations of guaiacum, opium, antimony, and mercury, have proved ineffectual, very speedy and good effects have been derived from a cautious exhibition of the arsenical solution, as noticed under the head of Intermittents. It may be given with an equal proportion of tinctura opii in doses of three minims,

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Vel,	*Or,*
℞ Gum. Guaiac. Pulv. ℈j. Pulv. Ipecac. Comp. ℈ss.	Take Powdered Gum Guaiac, one scruple. Compound Powder of Ipecacuanha, half a scruple.
Ft. pulvis, omni nocte capiendus.	Mix them for a dose, to be taken every night at bed-time.
* ℞ Liquor. Ammon. Acet. f. ʒiij.	* Take Solution of the Acetate of Ammonia, three drachms.
Aq. Cinnam. f. ℥j.	Cinnamon Water, one ounce.
Tinct. Opii, ♏xx.	Tincture of Opium, twenty minims.
Vini Antimon. Tart. ♏xvj.	Wine of Tartarized Antimony, sixteen minims.
Syrup. Papaveris, ʒij. M.	Syrup of Poppies, two drachms.
Ft. haustus.	Mix them for a draught.

repeated twice or thrice a day in any convenient vehicle, and probably a decoction of the cinchona bark may be as good as any we can employ.

No change whatever will be necessary in the patient's ordinary mode of living in chronic rheumatism, unless it happens to be intermixed with the acute, and then the diet should be cooling, light, and nutritive. In chronic rheumatism, mustard and horseradish may be taken freely in their natural state. Weak wine-whey, or barley-water, with a small quantity of the bitartrate of potass dissolved in it, may be used for common drink. Those who are subject to either kind of rheumatism should pay strict attention to clothing, and wear flannel next to the skin.

Where there are any suspicions of the disease being connected with a syphilitic taint, a long-continued course of mercurial alteratives (see Syphilis) must be entered upon.

Chronic rheumatism sometimes affects the lumbar region, with an acute pain shooting down into the os sacrum, so that the patient cannot stand upright without suffering great pain; neither can he enjoy ease when in bed. This affection is known by the name of lumbago. The disease sometimes fixes likewise in the sciatic nerve, and is then called sciatica. Both of these affections are to be treated nearly in the same manner as chronic rheumatism, —viz. by cupping, blistering, mercurial purgatives steadily pursued, and opium proportioned to the severity of the pain. In obstinate cases of sciatica, an issue may be advised. The application of moxa has sometimes been resorted to with benefit. In sciatica and local pains of the hip and loins, turpentine is often given with relief, as is likewise guaiacum combined with the essential oil of sassafras.

From a paper inserted in the sixth volume of the Memoirs of the Medical Society of London, by Dr. Wm. Falconer, it appears that the external application of the Bath waters has proved a most valuable and efficacious remedy in innumerable instances of the diseases of the hip-joint. The following is the mode of proceeding which has been pursued: —

When the patient is tolerably strong, and the symptoms moderate, he is directed to bathe in a hot bath of about 105 degrees of heat. The usual time of continuing in the bath is from fifteen to twenty-five minutes, and it is generally repeated twice or thrice a-week. After a few times bathing, the dry pump, as it is quaintly called, or pumping on the affected part without bathing, is advised; and from fifty to two hundred strokes of the pump are usually given.

The first good effects of the application are, to abate the stiffness and pain of the joint, and to afford a greater latitude and extent of motion, which are often perceived after using it three or four times. As the effects of the remedy proceed, the soreness and swelling diminish; the nocturnal pain, which is often very distressing, abates; the power of supporting the body on the lower limb on the affected side increases; and the muscles, that were wasted, regain their natural shape, firmness, and plumpness. Where a use of the waters seems to succeed thus favourably, there is no other remedy employed.

It sometimes happens, however, that the waters show their beneficial effects for a time, and then the amendment seems to stop, but still without any accession of new morbid symptoms, and without any aggravation of the old. In such cases it is found requisite to suspend the use of the waters for a short period, and to apply a blister upon the seat of the pain; after the healing of which, the application of the waters may be repeated with advantage.

Where it happens that the irritability of the nerves is much excited by a use of the bath, or that it causes profuse perspiration, much caution is required. In instances of the latter kind, unaccompanied by fever, a light infusion of cinchona with aromatics, is generally serviceable; but the tendency to fever is most to be apprehended. If the spot where the uneasiness is felt be extremely sore, and tender to the touch, and the swelling and pain are considerable, then it will be necessary to be on our guard. Cupping-glasses, with scarifications, are applied in such cases with advantage; or, if the skin be too sore or tender to endure without much pain the suction of a cupping-glass, a number of leeches are substituted, and, being repeatedly applied, prove of great service. In aid of these applications, saline cooling purgatives, and the common febrifuge draught, with antimonials, are administered with advantage. For the relief of the pain, which often subsists without fever, it is found necessary to employ opiates; and a preference is given by Dr. Falconer to the pulvis ipecacuanhæ compos., in the quantity of from five grains to twenty, once or twice in the course of the day and night.

If these means prove effectual in procuring an abatement of the symptoms, the bath is cautiously tried, and especially the cross-bath, which is cooler than the other, and this for a short time only. If it can be borne without aggravating the symptoms, but rather with a soothing effect, it is to be repeated after an interval of three or four days, the purgative before mentioned being occasionally interposed. When the bath can be borne with ease, the use of the pump in the bath is recommended, as the impetus of the water thrown on the part affected is less than in the dry pump, the stream being conducted to the part beneath the surface of the water of the bath.

By these means, with the assistance of a blister on the part, the application of the waters is rendered safe, and often effectual, in cases, we are told, that seemed at first view not to allow their use. To reduce the swelling, and promote a re-absorption of the effused fluid, when that can be safely done, Dr. Falconer directs a trial to be made of the lime poultice, composed of one part of quicklime, fallen to powder in the air, and two parts of oatmeal, which, being made into a poultice with hog's-lard, and spread thick on a cloth, is to be applied temperately warm to the part. This poultice is to be repeated every night, but to be removed in the morning. It generally produces some degree of moisture or exudation under it, though without raising a blister: and this gradual local discharge is often an effectual, though slow, method of reducing tumours both of the hip and of the knee.

Those who are subject to rheumatic complaints ought carefully to avoid all exposures to cold and wet, and they should go warmly clothed, and wear flannel next the skin.

In rheumatic affections of the head, accompanied by tenderness, whether a part only, or the whole of the pericranium or integuments be involved, we have seen the most marked benefit arise from the use of the iodide of potassium, given in three grain doses, thrice a-day, either in pimenta water, or compound decoction of sarsaparilla, the bowels being at the same time freely acted upon by mercurial purgatives. We consider this medicine as very valuable in all rheumatic, as well as in syphilitic, diseases of the periosteum; the two complaints being distinguished by the emaciation always observed to attend the latter, in addition to the history of the case, and the other diagnostic marks as commonly laid down.

In sciatica, after all active inflammation has been subdued by local depletions and counter-irritation, and where the pains have become intermitting, or have been so from the commencement, as in other neuralgic affections, the sesquioxide of iron, in drachm doses thrice a day, has received, and deservedly, much commendation. We believe it to possess no special virtue, and scarcely to equal in efficacy considerable (say five grain) doses of quinine given with equal frequency. A mixture of the sulphates of quinine and iron, containing about two grains of each, made into pill, has seemed to us still more powerful for procuring relief, and it is in these cases, too, that we look for benefit from the use of arsenic.

ORDER IV.

HÆMORRHAGIÆ, OR INVOLUNTARY DISCHARGES OF BLOOD.

Under this title are comprehended active hæmorrhages only, — that is, those attended with some degree of pyrexia, and which depend upon an increased impetus of the blood in the vessels from which it flows, chiefly arising from an internal cause. On venesection, the blood appears as in the cases of phlegmasiæ, — that is, the fibrine separated, or a buffy coat formed on the surface.

The general remote causes of hæmorrhages of this nature are, external heat, a sanguine and plethoric habit, whatever increases the force of the circulation,— as violent exercise, strong exertions, anger, and other active passions, particular postures of the body, ligatures producing local congestion, a determination to certain vessels, rendered habitual from the frequent repetition of hæmorrhage, the suppression of accustomed evacuations, external violence, and exposure to cold.

"Hæmorrhage," says Dr. Alison, "is usually regarded at present as simply a diseased state of exhalation; perhaps it has of late been too exclusively so considered, for certainly the greater number of fatal hæmorrhages in any of the shut cavities of the body, and some of those which take place from mucous membranes, are the result of rupture, or erosion of bloodvessels." It is to be remembered, however, that external discharges of blood, such as we are now discussing, are rarely fatal, so that the principle contended for in the latter part of the above paragraph probably applies to but a small proportion of the cases observed.

Besides the distinction of hæmorrhages into active and passive, another, which requires to be borne in mind, is that which divides them into idiopathic and symptomatic.

"Idiopathic hæmorrhage," writes Dr. Watson, in the Cyclopædia of Practical Medicine, "is that which occurs without any discoverable change of texture either in the part from which the blood proceeds or in any other part capable of influencing the circulation in the former, by reason of some intelligible connection of structure or function, or mutual relation.

"Symptomatic hæmorrhage, on the other hand, is that which depends upon some notable organic disease. It may be primary, as when the organic disease upon which it depends is situated in the very part which gives issue to the hæmorrhage; secondary when the organic disease is situated in some other part more or less distant from the former."

Without taking into account hæmorrhages depending upon an attenuated condition of the blood, which are for the most part of an asthenic or passive character, it may be laid down as a rule that idiopathic hæmorrhages are occasioned by general plethora, and are of a sthenic character; that those which are termed symptomatic and primary are accompanied with local congestion and irritation, and are also active in their nature; while those which are symptomatic and secondary, originating, as they mostly do, in congestion, which is the result of distant mechanical obstruction, may be either passive or active.

Hæmorrhages may be occasioned either by too copious a production of the vital fluid, by some partial accumulation of it, or by the laxity or tenuity of the vessels which contain it. Hæmorrhage seldom, however, comparatively speaking, arises from a more than ordinary mass or impetus of blood, but in general from a want of that contractile power in the artery which is necessary to resist its tendency to effusion.

Hæmorrhages, especially those of which we are now treating, are to be regarded as curative efforts of nature, of which some, termed constitutional on account of their habitual recurrence, require little interference, and the majority can be restrained by direct means only at the risk of some worse consequence being thereby entailed upon the patient. So it is, at least, as long as the loss of blood is not excessive. "The most powerful remedy in checking hæmorrhage," writes Dr. Alison, "is general blood-letting." He might have said of it, too, that it is the most safe and appropriate; and in many cases, "where the disease is attended with febrile symptoms either connected with the sudden local determination of blood or with incipient inflammation excited by the effused blood, large and repeated bleedings are obviously demanded and well borne. In such cases, also, the antiphlogistic regimen in all its parts, absolute rest, repeated purging, the local application of cold, if the part is near the surface, and sedative medicines — particularly nauseating doses of antimonials — properly precede the use even of astringents." What we would insist upon is, that blood-letting and antiphlogistic medicines are the appropriate remedies for sthenic hæmorrhages. Yet the former must not be carried too far, nor the latter continued too long. The character of the hæmorrhage often changes under treatment designed for its arrest, and it then becomes necessary to treat hæmorrhage, become passive, or asthenic, by the same means (astringents and the like) which would be suitable for those cases in which it was passive from the beginning.

EPISTAXIS, OR HÆMORRHAGE FROM THE NOSE.

In the nose there is a considerable net-work of blood-vessels expanded on the internal surface of the nostrils, and covered only with a thin tegument; hence, upon any determination of a greater quantity of blood than ordinary to the vessels of the head, those of the nose are easily ruptured. In general the blood flows only from one nostril; but in some cases it is discharged from both, then showing a more considerable disease.

Persons of a sanguine and plethoric habit, and not yet advanced to puberty, are very liable to be attacked with this complaint; females being much less subject to it than males, particularly after menstruation has commenced. Peculiar weakness in the vessels of the part and the decline of life may also be considered as predisposing causes. Great heat, violent exertion, external violence, particular postures of the body, and every thing that determines the blood to the head, are to be looked upon as its exciting causes. Epistaxis is occasionally to be traced to the suppression of some usual evacuation, such as that of the menses in young women.

Epistaxis comes on at times without any previous warnings; but at others it is preceded by a pain and heaviness in the head, vertigo, tinnitus aurium, flushing in the face, heat and itching in the nostrils, a throbbing of the temporal arteries, and a quickness of the pulse. In some instances, a coldness of the feet, and shivering of the whole body, together with costive bowels, are observed to precede an attack of this hæmorrhage.

The complaint is to be considered as of little consequence when occurring in young persons, being seldom attended with danger; but when it arises in those who are more advanced in life, flows profusely, and returns frequently, it indicates too great a fulness of the vessels in the head, and not unfrequently precedes apoplexy, palsy, &c., and therefore in such cases is to be regarded as a dangerous disease.

When this hæmorrhage arises in any putrid disorder—such as typhus gravior, scurvy, scarlatina maligna, &c.—it is to be considered as a fatal symptom. In these cases it is generally passive.

We have seen, however, one case of excessive epistaxis at the commencement of small pox; and one case of fatal hæmorrhage from the nose at the outset of continued fever; in both of which the hæmorrhage was at first of an active character.

As a bleeding from the nose proves salutary in some disorders,—such as vertigo and headach,—and is critical in others,—such as phrenzy, apoplexy, and where there is a determination of too great a quantity of blood to the head,—we ought properly to consider, at the time it happens, whether it really is a disease, or intended by nature to remove some other.

When it arises in the course of some inflammatory disorder, or in any other where we have reason to suspect too great a determination of blood to the head, we may suppose that it will prove beneficial, and therefore we should suffer it to go on, at least as long as the patient is not weakened by it.

Neither should it be suddenly stopped, when it happens to persons in good health, who are of a full and plethoric habit. In short, where a bleeding at the nose relieves any disagreeable symptom, and does not proceed so far as to induce debility, it ought not to be hastily checked.

In many of these cases it is both convenient and desirable to arrest the hæmorrhage by depletory means, which answer the same ends that the spontaneous bleeding was calculated to fulfil, and may be limited in amount, so as not to exceed the demands of the system. By a single bloodletting from a large orifice in the vein, conjoined with other means of depressing the circulation,—as purgative and nauseating medicines, or often by these latter alone,—we procure more speedy and effectual relief for the disorder which gave rise to the hæmorrhage, and more powerfully influence the action of the exhalants themselves, than by leaving the issue to the efforts of nature alone. If the hæmorrhage continue when it is no longer dependent upon plethora or irritation, and is not needed by the system, we must then have recourse to another class of medicines—as styptics—for repressing it.

When it arises in elderly people, or returns too frequently, or continues till the patient becomes faint, it ought to be put a stop to as quickly as possible: to effect this, the person is to be exposed freely to cool air, and to be placed nearly in an erect position, with his head somewhat inclined backwards; to drink freely of cold liquors, and to make use of an antiphlogistic regimen. Besides these means, he may cool his head with water, impregnated with muriate of ammonia or common salt, and snuff vinegar, diluted with cold water, frequently up the nose; or he may throw some astringent wash* repeatedly up the nostril from which the hæmorrhage proceeds, by means of a syringe. A saturated solution of alum in an infusion of roses (say half a drachm of the former to one ounce of the latter) is reported by Dr. Scudamore to be one of the most powerful styptics we can apply to bleeding vessels.

Should the bleeding nevertheless continue, a dossil dipped either in a solution of the nitrate of silver in water, the sulphate of iron in brandy, tincture of galls, or in Ruspini's styptic, may be introduced up the nostril. A tent wetted with the compound tincture of benzoin, and afterwards rolled in equal parts of alum and sulphate of zinc, may be tried, upon a failure of the former. One of the most powerful styptics, however, which we can use is powder of charcoal. In epistaxis it may be applied by means of tents, first moistened with water, and then dipped in this powder; but in slight cases it will answer by being taken like snuff.

A very simple method of arresting epistaxis, or at least of assisting the other expedients employed with that view, has been suggested by an author whose name we cannot recollect. It consists in causing the patient to stand, or sit upright, with both his arms extended in a vertical direction above his head. It is

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* ℞ Zinc. Sulphat. ʒj. Plumbi Acet. gr. x. Aquæ Distillat. f. ℥x. M. Ft. Injectio.	* Take Sulphate of Zinc, one drachm. Acetate of Lead, ten grains. Distilled Water, ten ounces. Mix them for an injection.
Vel,	*Or,*
℞ Aluminis in pulv. trit. ʒij. Aq. Rosæ, f. ℥vj. Acidi Acetici Dilut. f. ℥j. M.	Take Powdered Alum, two drachms. Rose Water, six ounces. Distilled Vinegar, one ounce. Mix them, and use the liquor as a wash or injection.
Vel,	*Or,*
℞ Tinct. Ferri Muriatis, f. ʒjss. Aq. Distillat. f. ℥vj. M.	Take Tincture of the Muriate of Iron, one drachm and a half. Distilled Water, six ounces. Mix them.
Vel,	*Or,*
℞ Acid. Sulph. Dilut. f. ʒjss—ʒij. Aq. Puræ, f. ℥ijss. M.	Take Diluted Sulphuric Acid, a drachm and a half to two drachms. Pure Water, two ounces and a half. Mix them.

necessary that this posture should be maintained for some time, and if this be impracticable or inconvenient when the individual is unassisted, the difficulty may be removed either by his arms being supported by others or by his holding a bar so placed above him as to keep himself in the required attitude. On one occasion only have we resorted to this expedient, and then it was successful; but the hæmorrhage had not been considerable. We have heard it advocated by others, and received the following explanation of its modus agendi. It is said that this position of the arms causes a greater vertical column of blood to press downwards upon the larger vessels near the heart, and upon the heart itself: it causes, therefore, a greater resistance to be offered to the force of the ascending column of blood. And this resistance, as we have said, extending to the aorta and heart, must diminish the impetus of the blood in the carotid and vertebral arteries, and in all the capillaries derived from them, and thus facilitate the cessation of the bleeding. We do not vouch for the efficacy of the method, nor for the correctness of the explanation; but we think the former well deserving a trial, on account of the ease with which it may be put in practice, and its non-interference with other means, as well as from its having some respectable testimony in its favour.

To assist the effect of other applications, a little cold water may be sprinkled with the fingers on the patient's face, and the genitals of a male be immersed now and then in the same fluid, or ice may be held on the forehead.

Dr. Darwin mentions in his Zoonomia the case of a lady who had a continued hæmorrhage from her nose for several days; the ruptured vessel was not to be reached by plugs up the nostrils, and the sensibility of her fauces was such that nothing could be borne behind the uvula. After venesection, and other common applications, she was directed to immerse her whole head in a pail of water, which was made colder by the addition of several handsful of salt; in consequence of which, the hæmorrhage immediately ceased, and returned no more; but her pulse continuing hard, she was necessitated to lose blood from the arm on the succeeding day.

In epistaxis, the application of pressure to the mouth of the bleeding vessel is often attended with a good effect, when other means prove unsuccessful.

The manner of making pressure in general use by surgeons consists in plugging the nose with sponge, which may be dipped in any astringent or styptic fluid. This is effected by the introduction of a slender bent instrument, with an eye at one end, and a handle at the other, of sufficient length to enable the operator to push a piece of strong silk or thread, tied in the eye, along the bottom of the nostril, and to make it project through the posterior nares into the pharynx. One end of the silk is then drawn out through the mouth, and to it a piece of sponge of sufficient size is attached. This body is then passed by the fingers backwards round the soft palate, then upwards, behind the posterior opening of the nose, and may be drawn forwards into the cavity of the nose itself by means of the ligature, the other end of which has either been left hanging out externally, or may be seized when the instrument is withdrawn. If necessary, the nostril itself may also be plugged from its anterior opening. Mr. S. Cooper advises that the silk should be of such length that a portion may project through the mouth and lips after the sponge or lint has been drawn into its place. The object of this is to facilitate the withdrawal of the foreign body when its presence is no longer necessary.

While we are pursuing these steps, we are at the same time to open the body, if necessary, with cooling purgatives, in order to make some derivation from the vessels of the head, a diet strictly antiphlogistic is to be enjoined, and the patient is carefully to avoid all those circumstances which might either determine the blood to the head, or prevent its free return from it.

Refrigerants—such as the saline medicine, with nitre*—may be advised every hour or so, the patient drinking cold acidulated liquors, and exposing himself freely to cool air.

Astringents—such as the sulphate of zinc, alum, and plumbi acetas—are sometimes given internally; but their effect seems doubtful, as they seldom have time to act. When the complaint is of long duration, they may be used as below.†

In this hæmorrhage, as well as in all other active ones, the tincture of digitalis, given in doses of twenty minims, every six hours, for four or five doses, may prove an efficacious remedy, particularly in full robust habits, or where there is a quickened circulation.

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* ℞ Liquor. Ammon. Acet. ℥iss.	* Take Solution of Acetate of Ammonia, an ounce and a half.
Vini Antim. Potassio-tart. ʒiss.	Wine of Potassio-tartrate of Antimony, a drachm and a half.
Aquæ Menthæ Sativæ, ℥iv.	Mint Water, four ounces.
Potassæ Nitrat. ʒss.	Nitre, half a drachm.
Syrup. Croci, ʒiij.	Syrup of Saffron, three drachms.
Misce: sumat quartam partem ter die vel sæpius.	Mix: let a fourth part be taken thrice a day, or oftener.
† ℞ Infus. Rosæ Comp. ℥vss.	† Take Compound Infusion of Roses, five ounces and a half.
Acid. Sulph. Dilut. ♏xxx.	Dilute Sulphuric Acid, thirty minims.
Magnes. Sulphat. ʒij—℥ss.	Sulphate of Magnesia, two drachms to half an ounce.
Tinctur. Lavand. Comp. ℥ss.	Compound Tincture of Lavender, half an ounce.
Misce: sumat quartam partem ter die.	Mix: let a fourth part be taken three times a day.
Vel,	*Or,*
℞ Infus. Krameriæ, ℥vss.	Take Infusion of Rhatany, five ounces and a half.
Potassæ Nitrat. ʒss.	Nitrate of Potass, half a drachm.
Syrup. Aurantii, ℥ss.	Syrup of Orange Peel, half an ounce.
Fiat mistura, ut antea sumenda.	Make a mixture to be taken as above.

In obstinate cases, the application of a blister to the neck has occasionally produced a good effect.

After the bleeding has ceased, the patient must be careful not to remove the tents or clotted blood, but should allow them to come away of themselves; and, in order to avoid any return of the hæmorrhage, he must be kept as still and quiet as possible, taking care not to apply any thing of a stimulating nature to the nose.

When it is caused by the suppression of some accustomed evacuation — such as the menstrual or hæmorrhoidal flux — this is to be restored if possible; but if we do not succeed, some other discharge, by means either of an issue or seton, must be substituted.

HÆMOPTYSIS, OR SPITTING OF BLOOD.

In hæmoptysis there is a discharge of blood of a florid colour, and often frothy, from the lungs, brought up with more or less of coughing or hawking, and preceded usually by a saltish taste in the saliva, a sense of weight about the precordia, difficult respiration, and a pain in some part of the thorax.

It is readily to be distinguished from hæmatamesis, as in this last the blood is usually thrown up in considerable quantities; is, moreover, of a darker colour, more grumous, and mixed with the other contents of the stomach, and is unattended by any cough; whereas blood proceeding from the lungs is usually in small quantity, is of a florid colour, fluid, mixed with a little frothy mucus, and brought up by coughing.

In some obscure cases the diagnosis will be assisted by the results of auscultation; the presumption in favour of hæmatemesis being strengthened, if no deviation from the healthy resonance of the chest or from the natural sound of respiration can be detected on a careful examination. The presence of a loose crepitation in any part of the lungs, or of dullness on percussion with bronchophony in the superior parts, or of any of the changes associated with the

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Vel,	*Or,*
℞ Plumbi Acetat. gr. xij. ad ℈j.	Take Acetate of Lead, twelve grains to a scruple.
Acidi Acetici, ♏xxx.	Acetic Acid, thirty minims.
Aquæ Distillat. ℥vj.	Distilled Water, six ounces.
Misce: sumatur pars quarta quartâ quâque horâ donec cessaverit hæmorrhagiæ.	Mix: and let a fourth part be taken every four hours till the bleeding has stopped.
Vel,	*Or,*
℞ Acidi Gallici ℈j. ad ʒss.	Take Gallic Acid, a scruple to half a drachm.
Aquæ Rosæ, ℥vss.	Rose Water, five ounces and a half.
Syrup. ℥ss.	Syrup, half an ounce.
Misce; dosis sit quarta pars tertiâ quâque horâ.	Mix: and let a fourth part be taken as a dose every third hour.

early stage of phthisis, will have weight in confirming the suspicion that the blood has come from the chest.

A spitting of blood arises most usually between the ages of sixteen and twenty-five, and may be occasioned by any violent exertion either in running, jumping, wrestling, singing, speaking loud, or blowing wind instruments; as likewise by wounds, plethora of the system, pneumonia, weak vessels, hectic fever, coughs, full living, excessive drinking, or the suppression of some accustomed discharge, such as the menstrual or hæmorrhoidal. It may likewise be occasioned by alternations of atmospheric temperature, sudden exposure to cold after being over-heated, or breathing air which is too much rarefied to be able properly to expand the lungs.

Persons in whom there is a faulty proportion either in the vessels of the lungs or in the capacity of the chest, being distinguished by a narrow thorax and prominent shoulders, or who are of a delicate make and sanguine temperament, or of a scrofulous diathesis, or who have had previous affections of the same disease, seem much predisposed to this hæmorrhage: but in these the complaint is often brought on by the concurrence of the various occasional and exciting causes before mentioned.

A spitting of blood is not, however, always to be considered as a primary disease. It is often only a symptom; and in some disorders—such as pleurisy, peripneumony, and many fevers—often arises, and is the presage of a favourable termination, if only very slight.

Sometimes it is preceded (as has already been observed) by a sense of weight and oppression at the chest, a dry tickling cough, some slight difficulty of breathing, and a hard jerking pulse. At other times it is ushered in with shiverings, coldness of the extremities, pains in the back and loins, flatulency, costiveness, and lassitude. The blood which is spit up is sometimes thin, and of a florid-red colour; and at other times it is thick, and of a dark or blackish cast; nothing, however, can be inferred from this circumstance but that the blood has lain a longer or shorter time in the chest before it was discharged.

An hæmoptoe is not usually attended with danger, where no symptoms of phthisis pulmonalis have preceded or accompanied the hæmorrhage; where it leaves behind no cough, dyspnœa, or other affection of the lungs; or where there is no malconformation of the pulmonary system: nor is it dangerous in a strong healthy person of a sound constitution, unless the hæmorrhage is very great; but when it attacks persons of a weak lax fibre and delicate habit, it may be difficult to remove. When closely connected with tubercular phthisis, the case may be considered very bad indeed.

In the great majority of instances, hæmoptysis is symptomatic of other diseases; and that with which it is most frequently associated is pulmonary phthisis. Our own observation would lead us to the conclusion that it is especially apt to occur near the commencement of this fatal malady; not uncommonly it is the first symptom of any serious indisposition, and frequently where its continuance has been prolonged, it has disappeared for a long period prior to the fatal termination. Upon this subject we cannot offer a better explanation, both of the proximate causes of the hæmorrhage and of the circumstances of its occurrence than are furnished by Dr. Hasse in his Anatomical Description of Diseases, as translated by Dr. Swaine. "The obliteration of the minuter twigs of the pulmonary artery" (he says at page 335) "speedily follows the deposition of tubercles; for when an injection is thrown into the pulmonary artery, it rarely happens that it can be propelled into the immediate vicinity of the crude tubercles."—"Closure of the pulmonary arteries" (he adds a little farther on) "takes place here precisely as in the instance of the fœtal vessels and of phlebitis; although without there being any ground for our assuming vascular inflammation. The walls of these vessels thicken or swell quite disproportionately; the several tunics merge into a single uniform sero-lardaceous mass; and the caliber, which long continues narrow, though pervious, becomes eventually filled with a thin, reddish, fibrinous plug, transforming the whole vessel into a solid cord. These cords either form a coarse network covered with remnants of lung, and invested with a purulent crust, upon the walls of a cavity, or traverse the latter as bands or bridles. In rare instances, a cord of this description tears, through attenuation, midway between its two ends, before definitive closure of its caliber. Then ensues, more or less violent, hæmorrhage, which often proves suddenly fatal; the vomica and the bronchial tubes corresponding are found replete with coagulated blood, which probably fills in a frothy state the trachea and larynx.

"The above explanation of the deportment of the blood-vessels will, at once, account for the hæmorrhage so frequently attendant on tubercular disease. It is often considerable at the outset, and recurs from time to time during the progress of phthisis, although not to such an amount as immediately to threaten life. It is chiefly observed where tubercle is rapidly developed in connexion with inflammatory action, or where the pulmonary texture is replete with densely-clustered tubercles. Carswell is, upon the whole, right in stating that the blood is poured out, because the pulmonary veins, being compressed by the multitude of tubercles, are not in a condition to take up the whole of the arterial supply."

Here we see the more frequent and ordinary examples of hæmoptysis as connected with phthisical disease, referred to an exhalation from obstructed capillaries, while the actual rupture of a considerable vessel traversing a vomica is recognized as an occasional, but far rarer, occurrence.

Other causes, of whatever nature they be, which operate in impeding the return of blood from the lungs, and so, sooner or later, produce a congested state of the blood-vessels distributed to them, must have a like tendency to give rise to the most common form of hæmoptysis, — viz. that which is caused by exhalation from the capillaries. Among these causes, alterations in the mechanism of the heart, by which the transmission of the blood through its left cavities is obstructed or interfered with, occupy an important place. Thus diseases of the aortic, or of the mitral valves, preventing the closure of the orifices at which they are placed, and permitting regurgitation of blood, or considerable contractions of these orifices themselves impeding its onward progress, may give rise to congestions of the lungs, and thus determine the occurrence of hæmoptysis. It must be conceded, however, that such morbid lesions may exist to a considerable extent, and be of long continuance, without being accompanied by this result. Pressure upon the pulmonary veins by aneurism, or other tumors, must be allowed to be a possible, though not frequent, source of hæmorrhage from the mucous membrane of the lungs. Aneurisms, too, may burst into the bronchi, and thus give rise to effusions of blood which are apt to be copious and are generally speedily fatal.

Pulmonary apoplexy, which Dr. Copland calls pulmonary, as distinguished from bronchial hæmorrhage, is another disease of which hæmoptysis is an occasional, though not a necessary, symptom.

Of idiopathic hæmoptysis, examples occur when there is exhalation from the bronchial mucous membrane, independently of any of the circumstances just mentioned, depending, no doubt, upon some local, if not general, state of plethora,—as where customary discharges from the uterus or rectum have ceased or been suppressed, and sometimes, too, attributable to no well-ascertained cause. Dr. C. J. B. Williams, if we remember right, considers hæmoptysis, when accompanying, or taking the place of, menstruation, to be more frequently indicative of a tendency to phthisis than is generally supposed. Amenorrhœa, no doubt, often is a consequence of the same tubercular formation, of which hæmoptysis is a symptom.

We have already pointed out some circumstances under which hæmoptysis for the most part gives rise to speedy death ; as a general rule it is not directly dangerous to life ; but it is always a source of alarm to the patient, and it is ever regarded with much anxiety by the physician, on account of the terrible diseases with which it is apt to be associated. Sometimes, too, when occurring in connexion with the rapid development of tubercles, it is so copious in amount as to bring the sufferer to the very verge of the grave, and it may at once terminate his existence. In all cases the treatment of the hæmoptysis must have reference to the coexisting malady or condition of the patient : its mere suppression by astringents or styptics is not the object of primary importance, though its discontinuance is much to be desired. Where a suspicion is entertained of pulmonary consumption, a few streaks of blood, or a very small amount of what might be called spitting of blood, is no better, nay by some is thought even of worse omen than its more abundant expectoration.

The learned Dr. Copland mentions hæmoptysis as an occasional attendant on hooping cough, slight, and perhaps unimportant, as accompanying that disease in children, but abundant and sometimes fatal in adults. He insists, also, forcibly upon the connection between hæmoptysis and inflammation of the lungs, considering the effused blood sometimes as a cause of pneumonia, in other cases as an effect of that disease; and stating the fact that, upon dissection of cases of hæmoptysis, he has not unfrequently found not only tubercles in every stage of their progress and results, but also inflammations of the substance of the lungs and of the pleura, with all the structural consequences, and yet in some cases no pain had been felt so severe as would have directed attention to the affection of the pleura. Dr. Addison, too, has shown the frequent coexistence of pneumonia and tubercular formations, and though the inference, which connects them as cause and effect, may not be admissible, yet the fact thus doubly attested must influence treatment, and make us cautious in hastily resorting to such means as are suited to arrest a merely passive hæmorrhage.

In an hæmoptoe, the effusion is to be moderated by a strict observance of the antiphlogistic plan; by carefully avoiding heat, and every kind of bodily exertion, and, where the hæmorrhage is severe, even speaking; and by employing antiphlogistic medicines — as slightly nauseating doses of antimony, varying from a twelfth to a quarter of a grain, which may be given in an ordinary saline mixture, and repeated every four hours. It is desirable to avoid the production of vomiting, as that would prove prejudicial by the struggle that accompanies it; besides, it is unnecessary to subject the patient to the distress it involves. When the hæmorrhage is slight and accompanied by pyrexia, or when there is reason to believe that there is some active irritation, if not inflammation, present in the lungs, we prefer giving the saline and antimony by themselves. Where it is an object to obtain a speedy arrest of the bleeding, it is advantageous to add five or ten grains of nitre to each dose. In all cases not only is it desirable to remove matters accumulated in the bowels, but so to purge as to produce derivation from the affected organs, and with this view we consider strong cathartics, as calomel and jalap, preferable to any combinations of saline aperients, or even to the ordinary black draught. Blood-letting from the arm is, however, the remedy most to be trusted, and if the case be urgent, should be resorted to without delay, especially if the patient be hot and feverish, or of a plethoric habit: yet in numerous instances where there is feebleness, though there may be much excitement of the circulation and pyrexia, it may be postponed with propriety, in the hope that its necessity may be superseded altogether. With the plethoric there is no need to hesitate, and for these too, the abstraction of blood may be free, as to the extent of from twenty to thirty ounces; for here it is desirable to diminish the mass of the circulating fluid, as well as to cause a shock upon the system; and such patients may bear well and benefit by a second and more moderate bloodletting. But even in the feeble or debilitated, where the means above described have been tried in vain, or been deemed insufficient from the commencement, bloodletting should be practised with the view of saving blood. Here the orifice of the vein should be large, that there may be a large stream, and that faintness may be produced at the least expense of blood, and to promote this end the patient should sit up in bed, and should afterwards be so propped up as to keep him faint for a time. We have seen a small bloodletting arrest hæmoptysis in cases of aortic and mitral regurgitation.

If the antiphlogistic treatment fail in subduing the expectoration of blood, when carried as far as the condition of the patient may demand or justify, it will at least have been effectual in reducing local plethora, or inflammation, and abating general pyrexia. And then astringents and styptics will be resorted to with better chance of success than at the commencement.

The acetate of lead has been used freely, and with great advantage, in hæmoptysis. One grain every four or six hours may be employed with perfect safety. In cases attended with imminent danger, we may venture on two or even three grains. It may be given in distilled water, or mint water, to which ten or fifteen minims of acetic acid and five of laudanum have been added, or in the form of a pill, if more agreeable. Its use must be omitted if any signs of colic show themselves; but the tendency to this will be in a great measure obviated, if care be taken to open the bowels every second or third day by means of a dose of Epsom salts just sufficient for this purpose. Half an ounce or six drachms will be about enough to act adequately on the bowels and to prevent the accumulation of lead in the system. We have on several occasions used sugar of lead in this way, and obtained its restringent action without any ill effects arising from its prolonged employment. Other forms of astringents will be found below*; and any of those mentioned in the article on Epistaxis may be tried in these cases also.

We have not ourselves been much in the habit of employing emetics; indeed, we have expressed our opinion that the use of antimonials should not be carried to the extent of producing vomiting;

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* ℞ Infus. Krameriæ, ʒxj.	* Take Infusion of Krameria, eleven drms.
Potassæ Nitrat. gr. x.	Nitrate of Potass, ten grains.
Pulv. Ipecac. Comp. gr. v.	Dover's Powder, five grains.
Syrup. Aurantii, ʒj.	Syrup of Orange Peel, a drachm.
Misce fiat haustus quartis horis sumendus.	Mix for a draught to be taken every four hours.
Vel,	*Or,*
℞ Infus. Rosæ Comp. f. ℥jss.	Take Compound Infusion of Roses, one ounce and a half.
Tinct. Digitalis, ♏x.	Tincture of Foxglove, ten minims.
——— Opii, ♏x. M.	——— Opium, ten minims.
Ft. haustus, 6tis horis capiendus.	Mix them for a draught, to be taken every six hours.

but, though unconvinced, we cite Dr. Copland's judgment on this subject:—"When the hæmorrhage has been already copious, or after bloodletting has been resorted to, an emetic of ipecacuanha, or of sulphate of zinc, or of a combination of both[*] is serviceable, not only in aiding the arrest of the effusion, but also in evacuating the blood accumulated in the bronchi, and thereby preventing the ill effects which this fluid would produce if it were allowed to remain. It is not merely the vomiting caused by an emetic which is beneficial, but the effect which is produced upon the heart's action." "In the passive or asthenic forms of the disease, nauseants, especially the tartar emetic, may be injurious, even in the same case wherein an emetic of sulphate of zinc might prove of service."

Of purgatives, he says that they ought never to be neglected, and thinks that the most generally appropriate are the sulphates with sulphuric acid in infusion of roses, or bitartrate of potash in the form of electuary, with the exception perhaps of oil of turpentine, conjoined with castor oil.[†] As we have already stated, we

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Vel, ℞ Infus. Rosæ Compos. f. ℥jss. Aluminis, gr. x. Zinci Sulphat. gr. ½. Tinct. Opii, ♏x. Syrup. simpl. f. ʒj. M. Ft. haustus, 4tis horis capiendus.	*Or,* Take Compound Infusion of Roses, one ounce and a half. Alum, ten grains. Sulphate of Zinc, half a grain. Tincture of Opium, ten minims. Syrup, one drachm. Mix them for a draught, to be taken every four hours.
Vel, ℞ Plumbi Acetat. gr. jss.—iij. Opii, gr. ss. Confect. Rosæ, q. s. M. Ft. pilula, quartâ vel sextâ quâque horâ sumenda.	*Or,* Take Acetate of Lead, one grain and a half to three grains. Opium, half a grain. Confection of Roses, a sufficiency to make them into a pill, which may be taken every fourth or sixth hour.
[*] ℞ Pulv. Radicis Ipecacuanhæ, gr. xxv. Fiat pulvis emeticus.	[*] Take Powdered Ipecacuanha Root, twenty-five grains. As an emetic.
Vel, ℞ Pulv. Zinci Sulphat. ℈j. Solve in Aquæ ℥iv. et sit pro emetico.	*Or,* Take Sulphate of Zinc, a scruple. Dissolve in four ounces of Water, for an emetic.
Vel, ℞ Pulv. Radic. Ipecac. Zinci Sulphat. ā gr. x. Misce, fiat pulvis emeticus.	*Or,* Take Powdered Ipecacuanha Root. Sulphate of Zinc, of each ten grains. Mix for an emetic.
[†] ℞ Infus. Rosæ Compos. f. ℥jss. Magnes. Sulphat. ʒij. M. Ft. haustus, pro re natâ adhibendus.	[†] Take Compound Infusion of Roses, one ounce and a half. Sulphate of Magnesia, two drachms. Mix them, and take this draught as occasion requires.
Vel, ℞ Olei Terebinthinæ Olei Ricini, ā ℥ss. Misce.	*Or,* Take Oil of Turpentine. Castor Oil, of each half an ounce. Mix.

prefer the more powerful cathartics — as calomel, with scammony, jalap, rhubarb, cathartic extract in various combinations according to circumstances, on account of their greater derivative effect, at least in the commencement of the malady. At a later period those mentioned by Dr. Copland will be sufficient, and more suitable. As a derivative, dry cupping, between the scapulæ or on the chest, has been recommended when neither venesection nor local blood-letting can be borne. Taking blood by cupping from the chest after, or instead of, drawing it from a vein, is a plan which has found advocates; and may sometimes be useful in unloading the gorged vessels, especially in those cases where, as Dr. Hasse intimates, the functional blood vessels of the lungs are to some extent replaced by vessels from the aortic circulation, the blood of which is returned through the systemic veins. Venesection we believe to be at least as efficacious in emptying the over distended vessels, and more beneficial by the temporary collapse it induces, than any local means.

Cold is an agent of considerable power in checking hæmorrhage: hence cold, or iced drinks, and sponging the chest with cold water, or vinegar and water, are expedients always dilated upon by authors, and are, in truth, means not to be overlooked or despised: yet, withal, they are not to be adopted without some circumspection and caution. It becomes the medical man to be collected and calm, though friends and others are terrified and bewildered, and to allow time for the developement of the effects of the best means that he can select, rather than to exhaust at once his storehouse upon the enemy. Disease is rarely conquered by a coup de main: festina lente is a good motto in medicines; we have often thought that it is apt to be too much overlooked by medical men who are fussy, and busy, and operose, and so seek and often obtain credit for a zeal which is at times destitute of discretion. If, because an individual spits a little blood, the chest is to be sprinkled, or sponged, or dabbed with water, and exposed to a current of air, a not infrequent result will be that a catarrh or rheumatism is added to the existing evils under which he is suffering; while the gain is such as might have been obtained without any such risk or accident.

Rest, quiet of mind as well as of body, a somewhat raised position of the chest, very spare diet, cool and acidulated drinks, with the medical treatment already indicated, should have a fair trial of some hours before beginning to dash, and wet, and swill the person: and after the use of these last means the medical attendant who has watched their effects should take care that his patient's body and clothes be dry, and himself lightly covered before he leaves him.

If the hæmorrhage resists all the means which have been advised, it will be proper to apply a blister to the chest; which remedy has often been attended with much advantage, particularly where a fixed pain is complained of.

Dr. Rush tells us, that a table-spoonful or two of common salt is often successful, when other means will fail.

Should these remedies prove ineffectual in putting a stop to the hæmorrhage, we may make a trial of Ruspini's styptic; but, as it appears to possess very active powers, the full dose advised in the printed directions should not be continued after the bleeding stops. If its use is persevered in to prevent a return of the disease, the dose should be reduced to one-half, and be repeated at longer intervals.

Among astringents, the tannic acid, in doses of ten grains or more, may be given in distilled water or in any appropriate vehicle.

When much coughing attends on hæmoptoe, it will be necessary to have recourse to opium, exhibited in small and frequently repeated doses along with the other remedies; or, instead of opium, we may recommend some mucilaginous mixture, with a little syrup of poppies to be taken frequently.

After the effusion is stopped, we are to use every possible means for preventing its return. If the complaint has arisen from predisposition, and where an inflammatory diathesis prevails, it may be necessary to obviate this by small bleedings, repeated according to the urgency of the symptoms; besides which, we may employ refrigerants and cooling purgatives occasionally, the patient at the same time adhering strictly to an antiphlogistic regimen, and avoiding all vigorous exertions of the body, agitations of the mind, and other occasional causes.

Sailing, travelling in an easy carriage, swinging, and riding gently on horseback, will be the most proper exercises.

Where the disease arises in persons of a lax fibre and delicate habit, having a weak pulse, it has been customary to exhibit the bark of cinchona in the form of decoction or infusion, joined with about fifteen drops of diluted sulphuric acid. Chalybeates seem to be unsafe medicines in all cases of active hæmorrhage, and have been known frequently to prove prejudicial in hæmoptoe, by increasing the phlogistic diathesis.

Whenever there is a fixed pain in the chest, a blister may be applied over the part with considerable advantage.

Where hæmoptysis itself has been prone to return, accompanied by other threatenings of phthisis, or where the cessation of the former symptom has left the patient not free from these latter, a residence in a southern climate, during the next ensuing winter at least, will be highly prudent, if not necessary for his complete restoration. Of all the favoured spots that have been selected as asylums for those threatened with pulmonary disease the island of Madeira is the one in the soothing influences of which we place most confidence: and this may be the resort of those whose means enable them to avail themselves of its advantages. For many, a single winter's residence will not be enough; their health being too delicate for again enduring the severity of a northern climate in all its capriciousness; and to such, this circumstance would afford additional inducements for seeking at once, in the wide extent of the British colonies, whether in Australia or the Canadas, some locality where the heavens may favour their taking part in those active duties of life for which their constitution unfits them here.

HÆMATEMESIS, OR VOMITING OF BLOOD.

A HÆMORRHAGE from the stomach is readily to be distinguished from one which proceeds from the lungs, by its being usually preceded by a sense of weight, anxiety, or pain in the region of the stomach; by its being unaccompanied by any cough; by the blood being discharged in a very considerable quantity, of a dark colour, and somewhat grumous; and by its being mixed with the other contents of the stomach; and sometimes, too, by the simultaneous discharge of black pitchy matters by stool.

The disease may be occasioned by acrid poisons, or any thing received into the stomach which stimulates it violently or wounds it; or may proceed from blows, bruises, or any other cause capable of exciting inflammation in this organ, or of determining too great a flow of blood to it; but it arises more usually as a symptom of some other disease (such as a suppression of the menstrual or hæmorrhoidal flux, or obstructions in the liver, spleen, and other viscera) than as a primary affection. Towards the close of scarlatina maligna, typhus gravior, purpura, and other disorders of a like nature, where symptoms of putrescency prevail in a high degree, a hæmorrhage from the stomach is very apt to arise.

Hæmatemesis is seldom so profuse as to destroy the patient suddenly; and the principal danger seems to arise from the great debility which repeated attacks of the complaint induce.

The appearances to be observed on dissection, where it proves fatal, will depend on the disease of which it has been symptomatic.

Where this complaint has arisen in a plethoric habit, and is attended with febrile symptoms, or such as indicate an inflammatory diathesis, it may be necessary to take away blood from the arm; but the great debility which the disease produces of itself will not admit of this operation under any other circumstances. Leeching or cupping over the left hypochondrium may sometimes be used.

In moderate attacks of the disorder it may be sufficient to give the compound infusion of roses with a drachm of sulphate of magnesia, three or four times in the course of the day; free purging, by the repetition of mild aperients, being desirable, both for the sake of derivation from the congested membrane, and in order to enable us to judge of the extent of the hæmorrhage, by bringing into sight the unknown amount of blood which might otherwise collect in the intestines. Where, as is often the case, there is reason to suspect the existence of hepatic obstruction, two or three grains of calomel may be given at the outset, an hour or two before the administration of the first of these draughts; or a single grain may be given each night, combined with opium or not, according to the circumstances of the case. In affections of the spleen, mercury is considered as contra-indicated.

The food should be farinaceous and unirritating, and scanty in quantity; and cool acidulated drinks—as sulphuric acid lemonade—may be sipped from time to time; or some acidulated water ice may be swallowed in small quantities at intervals.

The exhibition of powerfully astringent medicines should not precede the relief of those congestions of the liver or spleen, of which the hæmatemesis may be a consequence, or the attempt to re-establish those discharges of which it may be vicarious. In rare instances bloodletting, either general or local, very commonly a free action on the bowels, should be premised for the relief of the former affections; while, according to the supposed proximate cause of the interrupted discharges, leeches to the groins, or to the verge of the anus, may be employed, with emollient enemata; or aloetic purgatives with stimulating injections — as those of turpentine — for exciting the customary actions which have ceased. The styptic power of the compound infusion of roses may be increased by the addition of from five to ten minims of dilute sulphuric acid, and from five to ten grains of alum to each dose; while griping may be obviated by five drops of tincture of opium, and enough Epsom salts in the same draught as proposed above to keep the bowels in a free state: or, this acid being laid aside, the acetate of lead in the forms already indicated in the articles Epistaxis, or Hæmoptysis, may be substituted, or any of the other astringents named under those heads.

In hæmatemesis I have the strongest reasons for presuming that there is not a more effectual astringent than the tinctura ferri sesquichloridi; for, by being applied here immediately to the surface of the bleeding vessels, it acts as a styptic. It may be given in doses of twenty or thirty drops in a little cold water, and be repeated every hour or two, till the hæmorrhage ceases. Should it resist this medicine, we may make use of Ruspini's styptic.

The application of a blister to the abdomen in severe attacks is sometimes attended with a good effect.

When the hæmorrhage is stopped, it will be advisable to discover, if possible, the cause from which it proceeded, and, by removing that or the primary disease, to prevent any return of the complaint.

Where hæmatemesis arises in putrid diseases, we must avoid all debilitating means, and have recourse to the most powerful antiseptics. (See Typhus Gravior.) Where a scirrhous tumour of the liver or spleen exists, and seems to have given rise to the hæmorrhage, we must resort to hydrargyrum, conium, and the other means advised in chronic hepatitis and splenitis.

A modern writer informs us, that he has met with a variety of this disease in females from eighteen to thirty years of age, and by no means originating in organic affection of the stomach or viscera connected with it, that resisted the usual routine of treatment with cold acidulated liquors and different emmenagogues, but which readily gave way, on procuring copious and free alvine evacuation, by the exhibition of purgatives. There can exist no doubt as to the propriety of giving purgatives in such cases, and indeed in all others where the affection occurs independent of fever, provided the strength be not much impaired.

HÆMATURIA, OR VOIDING OF BLOOD BY URINE.

THIS disease is sometimes symptomatic of a general hæmorrhagic tendency, but is commonly occasioned either by falls, blows, bruises, or some violent exertion, such as hard riding and jumping; or arises from a small stone lodged either in the kidney or ureter, which, by its size, or irregularity, wounds the inner surface of the part it comes in contact with; in which case the blood discharged is most usually somewhat coagulated, and deposits a sediment of a dark brown colour, resembling the grounds of coffee. It is rarely, if ever, an idiopathic disease.

In certain epidemics of the malignant type, says Dr. Prout,— as, for instance, in cholera, in severe remittent or typhoid fevers arising from or modified by malarious influence, — as in affections of the spleen and liver produced by the same cause; also in scurvy, &c., — the properties of the blood and of the vital solids appear to undergo certain changes producing a tendency to hæmorrhage from all the outlets of the body, and from the kidneys and bladder in particular.

The immediate or exciting cause of hæmaturia may be of a mechanical nature, — that is, a calculous concretion; or the cause may consist in ulceration, healthy, or malignant, of the kidney and bladder, or of their appendages.

Some irritant poisons—as more especially cantharides—when taken internally, or absorbed through the skin, produce irritation of the urinary organs accompanied by hæmaturia. The inhalation of arseniuretted hydrogen, in some of the severe or fatal cases where this accident has occurred to chemists, has been accompanied by this symptom.

The varieties of concretion to which Dr. Prout refers the production of hæmorrhage from the urinary organs are the lithic acid and the oxalate of lime. The presence of lithic acid mixed with the blood, and the fact of this acid abounding, or having previously abounded, in the urine, or of the patient having passed lithic acid, gravel or concretions, and the existence of pain during the hæmorrhage, are pointed out as circumstances that will weigh on the side of the former source of this symptom. The absence of lithic acid at the time, the greenish citron tint of the urine, the fact that the patient has at no time been subject to urinary sediments of lithate of ammonia, and that he has more or less laboured under cutaneous eruptions of a scaly kind, and presents the cachectic aspect of the oxalic acid diathesis, render it probable that the hæmorrhage is occasioned by a concretion of the mulberry variety.

When the blood voided in the urine is mixed with mucus, and particularly when it is with purulent matter, breach of surface, we are further told by the same author, must exist somewhere; and there is certainly either actual or incipient ulceration in some portion of the urinary apparatus; and if the blood be very dark coloured and associated with unnatural matters of a highly offensive, and particularly of a putrid, odour, the ulceration very probably partakes of a malignant nature, and will prove fatal. When urinary calculi have been known to descend from the kidney, and there is a sense of heat, weight and pain in the region of that organ; when the pain darts to the end of the urethra or testicles, and there is more or less of nausea and vomiting; when the blood is more or less equally diffused through the urine; when elongated masses of fibrin, like worms, are found in it, the kidney is probably the source of the hæmorrhage.

When the hæmorrhage comes on after exercise, and there is occasional retention or sudden stoppage of urine, with a sensation referred to the end of the penis; when this sensation is felt at the moment the bladder is emptied; when after rest the first portions of urine are nearly clear, and the great mass of blood comes away at the end of the act of micturition; and when the ordinary symptoms of renal irritation are absent, there can be little doubt that the source of the hæmorrhage is in the bladder.

Such are the means furnished by Dr. Prout for determining, as far as possible, the causes and seat of hæmaturia.

It is distinguished from the high-coloured urine attendant on many diseases, by the deposit of a coagulum on the bottom of the vessel, and by its staining linen of a red colour. Also, by the effects of heat and nitric acid, by which the presence of the serum of the blood in the urine may be ascertained in the manner spoken of in the article on Albuminuria; the presence of the colouring matter of the blood at the same time is known by brown or blackish colour produced by these agents. The globules of the blood may, besides, be recognised by the microscope in that portion of the urine which is found at the bottom of a tall vessel or test tube in which the fluid has stood for some hours to allow them to subside. The upper portions may be poured away, and a drop of the lowest stratum taken for examination. It is only the fibrinous part which coagulates spontaneously.

The voiding of bloody urine is always attended with some danger, particularly when mixed with purulent matter. When it arises in the course of any malignant disease, it shows a highly putrid state of the blood, and always indicates a fatal termination. It is not common for the loss of blood to produce death by exhaustion alone; but this does sometimes occur, as stated by Dr. Prout to have been witnessed by himself in one or two instances.

We have met with such a case in our own practice in which hæmaturia, which had lasted for considerably more than a year, proved fatal in this way. Many circumstances concurred to convince us that the kidney was here the source of the hæmorrhage; but we were not permitted to ascertain its cause by examination after death.

Blood may come in drops without urine, and then is known to proceed from the urethra. Sometimes the presence of a small calculus there will give rise to some obstruction and pain in making water, and there may be blood either passed alone or washed out with the urine. We have lately seen such a case, in which the appearance of blood in the urine, with which, however, it was not intimately mixed, ceased after the escape of a small irregular shell of lithic acid.

The appearances to be observed on dissection will accord with those usually met with in the disease which has given rise to the complaint.

In the treatment of hæmaturia we must be guided by the cause which has occasioned it.

If it has arisen in consequence of some external injury—such as a blow or fall—or the patient is of a full plethoric habit, it may then be proper to make use of evacuation by bleeding, giving him a couple of table-spoonsful of an acidulated infusion of roses, with a small quantity of nitre dissolved in it, every two or three hours; and employing some gentle purgative—such as the oleum ricini, or a solution of magnesiæ sulphas, or sodæ sulphas—every second or third day, to keep the body open.

If the hæmorrhage should continue after these steps have been taken, we must resort to astringents, as noticed under the former heads, beginning with those of the milder kind. To allay irritation, we may also give opium in small doses every four or six hours. Where there is any deposit of muco-purulent matter in the urine, about half a drachm of uva ursi in powder, three times a day, may be of service, the patient taking the double-acidulated soda-water for common drink.

When hæmaturia proceeds from a stone either in the kidney, ureter, or bladder, it is only to be cured by removing the cause; but as this may not be always practicable, we must then be contented to moderate the symptoms by making the patient drink plentifully of mucilaginous liquors,—such as barley-water, solutions of gum acacia, or a decoction of marshmallows sweetened with honey,—by giving him repeated small doses of opium, joined with refrigerants, and by throwing emollient clysters frequently up the intestines.

In hæmaturia decidedly connected with malarious origin (says Dr. Prout), the mineral acids, conjoined with quinine, galls, the tinctura ferri sesquichloridi, alum, and other remedies of this class, are generally found to be most efficient. When the milder and safer remedies fail, we may resort to those of a more powerful character,—as arsenic, zinc; and of all other remedies when the hæmorrhage takes place from the kidney, the acetate of lead is perhaps the most efficient. When renal hæmaturia, he adds subsequently, is connected with a gouty diathesis, colchicum may sometimes be advantageously joined with the appropriate styptic remedies. In such cases, also, the carbonate of soda may be often given with good effect after meals; while the mineral acids, &c., are taken at other times of the day.

When the bladder becomes distended with blood, and complete retention of urine in consequence takes place, he advises recourse to a large-eyed catheter and an exhausting syringe, by the aid of which, and an occasional injection of cold water, the coagula may be broken down and removed. Should these means fail, from twenty to forty grains of alum may be dissolved in each pint of water injected into the bladder, a remedy which seldom fails to check the hæmorrhage even when the cause is malignant disease; and which has not been found to produce any unpleasant consequences.

Dr. Prout states that the red particles of the blood discharged in the earlier stages of fungoid disease have often a remarkable appearance, and seem to the eye larger than natural, so that when they have subsided to the bottom of the urine they at first sight somewhat resemble grains of lithic acid gravel. Sir B. Brodie mentions that in the advanced stage of fungus hæmatodes of the bladder, the urine is of a dingy brown colour, of an offensive cadaverous odour, and small fragments of medullary substance, separated from the surface of the tumor, may be detected in it. If the blood, he adds, afterwards appears in the form of large masses of coagulum of an irregular shape, we may be satisfied that it flows from the bladder and not from the kidneys, and we may arrive at the same conclusion if we find that a small quantity of pure blood is discharged from the urethra after the effort made to expel the last drops of urine. If under these circumstances no calculus can be detected on repeated and careful examinations with a sound there are strong grounds for suspecting the existence of a medullary tumor; which will be strengthened if the instrument be felt to strike against a tumor in any part, or if small portions of its substance be found sticking in the eyes of a silver catheter used in the same manner. Opium, rest, and the use of the tannic and mineral acids are the means recommended for palliating this terrible disease.

In all cases of disease implicating the bladder, it is of primary importance that the patient should be protected from all irritation propagated from the rectum, whether arising from hæmorrhoids, from a loaded state of that part, or from the effects of straining at stool.

For this purpose, either mild laxative enemata, or castor oil, or the confection of senna, with ten or fifteen grains of flowers of sulphur added to each dose, should be taken with such frequency as to keep the bowels gently open without effort in evacuating them.

A case of hæmaturia is recorded in the eighth volume of Medical Facts and Observations which had resisted repeated bleedings and warm bathing, saline purgatives, emetics of different kinds, camphor and opium in large doses, uva ursi, mephitic alkaline water, &c., and which was quickly and effectually removed by giving the patient a pint a-day of a decoction of peach-leaves. This was prepared by boiling an ounce of dried leaves of the peach-tree (*Amygdala Persica* Linn.) in a quart of water, till it was reduced to a pint and a half.

MENORRHAGIA, OR IMMODERATE FLOW OF THE MENSES.

A flow of the menses is to be considered as immoderate when it either returns more frequently than is natural, continues longer than ordinary, or is more abundant than is usual with the same person at other times. With the extraordinary flux of this secretion there are usually pains in the back and belly, somewhat like those of childbirth.

The usual period of its visitations is from twenty-seven to thirty days. As to the time of its continuance, this is various in different women; but it seldom continues longer than six days, or less than three, and does not cease suddenly, but in a gradual manner. The quantity generally discharged, in a healthy and regular woman, is from four to six ounces at each visitation.

The quantity of the menstruous fluid is greater in warm than in cold climates; so, if a woman lives in an atmosphere artificially warmed, much the same effect is produced. For practical purposes, it is of consequence to observe, that menstruation is a secretion, and not an effusion, of pure blood either from the arteries or veins. All blood from the sanguiferous vessels (with few exceptions) coagulates; whilst the fluid of the catamenia does not, whether it comes away in a dropping manner, or is retained in any considerable quantity,—as in the case of imperforate hymen. Yet, according to Dr. Locock, the cases are very rare in which profuse menstruation occurs without admixture of real blood.

The causes of menorrhagia may be referred to,

1st, A plethoric state, or general fulness of habit.

2dly, Accidental circumstances determining the blood more copiously and forcibly into the uterine vessels,—as violent exercise in dancing; strokes or contusions on the belly; strains, and violent passions of the mind. Occupations which require long continuance in an upright posture, with more or less exertion,—as washing, mangling, and much walking.

3dly, Irritations acting particularly on the uterus,—as great costiveness, obliging the person to much straining at stool; excess in venery, particularly during menstruation; or the application of wet and cold to the feet, which may determine a greater flow of blood than natural to the uterus. Cold is more frequently, however, a cause of suppression.

4thly, Laxity and debility of the organ, arising from frequent childbearing, difficult and tedious labours, or repeated miscarriages.

5thly, Those circumstances which induce debility of the whole system,—as a sedentary and inactive life, indulging much in grief and despondency, living upon a poor low diet, drinking freely of warm enervating liquors (such as tea and coffee), and living in very warm chambers; and,

6thly, Organic affections,—such as schirrhus, polypus, ulceration, &c.

Dr. Rigby speaks of an inflamed or irritated condition of the ovary, almost always of the left, to which he has given the designation of oöphoritis, as a not uncommon cause of menorrhagia.

An immoderate flow of the menses arising from plethora is often preceded by headach, giddiness, or dyspnœa, and is afterwards attended with pains in the back and loins, some degree of thirst, restlessness, universal heat, and a frequent pulse: but where it arises in consequence of a laxity of the organ, or of general debility, and such attacks are frequently repeated, the symptoms which attend are, paleness of visage, chilliness, laxity and flabbiness in the muscular fibres, unusual fatigue on exercise, hurried respiration on the slightest effort, pains in the back on remaining any length of time in an erect posture, and coldness of the extremities, together with loss of appetite, indigestion, and a long train of nervous complaints.

It is of no small importance to distinguish apparent from actual debility,—a state of plethora from one of spanæmia; while there are many circumstances accompanying menorrhagia which are calculated to mislead us in the view we may take of the constitutional condition of those labouring under that affection. Thus the fashion of the present day, which refers everything to weakness, disposes the sufferer to attribute the commencement, and, still more, the continuance, of the disorder to that source; while there is much in her own sensations, as experienced in the back and loins, and in the system at large, to confirm that impression. Now we must remark that the pulse affords us no certain criterion; since in the plethoric it is often small and soft instead of hard and strong; so that although the existence of either, or both, of these latter states strongly confirms the suspicion of plethora, that of the former by no means disproves it. Much, however, may be learned from the aspect of the countenance; florid and full lips, and a general rosy hue being incompatible with the debility arising from repeated hæmorrhage: much also from the state of the skin, which, if it be found tense, elastic, and warm, is hardly indicative of exhaustion from this cause. In actual debility the skin is wont rather to be soft, flaccid and clammy. Again, in plethoric or congestive debility, the weakness is paradoxical in its character, being most felt in the morning after sleep, which ought to be refreshing, least urgent at night after the wear of the day, which is wont to be depressing. Then we may be assisted, also, by learning that stimulants—as beer or wine — cannot be taken without headach or giddiness, or that these and a tonic regimen, if giving momentary relief, have effected no permanent improvement of strength when persevered in; while, in addition, it will sometimes happen that the sufferer feels better and stronger shortly after, than immediately before, the uterine loss.

These particulars may assist us in distinguishing plethora from actual debility, while, as will be seen further on, there are indications of local active congestion or inflammation, coexisting, it may be, with actual debility, which will require no less than plethora or antiphlogistic treatment, though modified in character and degree.

In forming our prognostic in this disease, we must be directed by the nature of the cause which has given rise to it. If occasioned by plethora, or a general fulness of the system, we need apprehend no danger, as a temporary debility will be the only inconvenience the woman will experience; but where it is produced by a laxity of the vessels of the organ, and is profuse, long continued, and of frequent occurrence, there will always be a risk of its inducing much general debility and a leuco-phlegmatic habit. Leucorrhœa is a common consequence of it. Where it arises from an organic affection of the part, which is sometimes the case after the age of forty-five, it is usually deemed incurable.

When menorrhagia proves fatal in consequence of a scirrhus of the uterus, this organ is observed, on dissection, to be much increased in size, and its substance to be thick and hard; and, when cut into, shows a firm structure intersected with membranous septa. The internal surface is at the same time usually ulcerated, and beset with ragged processes, and from these ulcerated parts the hæmorrhage proceeds.

If polypi are the organic affection, these, on dissection, are generally to be found adhering to some part near the neck of the womb, and they are surrounded with varicose vessels, which throw out the blood in considerable quantity when a rupture of any of them happens to take place.

Many other morbid affections of the uterus are sources of discharges of blood from the organs of generation in women. Among these may be mentioned the cauliflower excrescence, the fibrous tumor and ulceration, or induration, not of a scirrhous nature. It is most important for the well-being of the patient that these several sources of symptoms bearing much resemblance among themselves, should be accurately distinguished by the medical practitioner, and this can only be done in a satisfactory manner by manual examination, or by recourse to the speculum. We are not advocates for the immediate resort in all cases to these methods of investigation, since many disorders of this class admit of successful treatment independently of the guidance afforded by them. But where, on the contrary, the complaint has proved obstinate, and the general health is giving way, it would be unjust to the sufferer to abstain from such means of obtaining the most accurate information as to the nature of her malady.

Where a profuse flow of the menses is attended with severe pains in the back, and febrile symptoms, and the patient is of a full and robust habit, it will be proper to draw off a few ounces of blood; but in other instances venesection may very safely be omitted.

In general it will be sufficient to employ the other antiphlogistic means,—such as keeping the body gently open with laxative medicines that give but little stimulus; administering refrigerants; enjoining the use of a light spare regimen, with cool acidulated liquors—such as lemonade or tamarind beverage,—and keeping the chamber of a moderate temperature, and the bed or mattress (which will be more proper) lightly covered with clothes. Besides adopting these means the patient is to avoid an erect posture, and all such things as might prove exciting causes.

By avoiding these, and moderating the first beginnings of the disease, it is probable that women might in most cases prevent that debility which repeated and severe attacks of menorrhagia are apt to occasion.

It is sufficiently evident that if we are correct in assigning to these diseases the place which they here occupy among the pyrexiæ, the treatment suited to inflammatory diseases generally must be appropriate to them. Were other treatment suggested, we might dismiss it with the remark that it assumed them to be non-inflammatory, and that this assumption was contrary to the hypothesis upon which we were arguing. Such an objection on subjects of abstract reasoning would be final; but in relation to practical or applied science it is not equally satisfactory. As, however, we believe that the inflammatory or actively congestive origin of this hæmorrhage is often overlooked, we are anxious to call attention to the character which Cullen, by his classification, assigned to it, and which other authors have recognised as belonging to it. "In a great majority of instances," says Dr. Copland, "the hæmorrhage is the result of active determination or congestion, and it is often connected with a chronic or slight grade of inflammatory action. In these circumstances the discharge ought not to be arrested by astringents or tonics; for I have seen this kind of interference convert a slight and salutary hæmorrhage into a severe or chronic inflammation. It will be better to attack at once the pathological conditions — general or local plethora, or local vascular excitement — upon which the disease depends, by general or local depletion, by internal refrigerants, by a strictly antiphlogistic diet and regimen, and by repose of mind and body. To the same purport Dr. Locock, in describing the proper treatment in his article on Hæmorrhagia in the Cyclopædia of Practical Medicine, tells us that "it is too often the case that medical men in such instances, as a matter of course, order medicines containing infusion of roses, and the mineral acids, and such like. This is the every-day routine, and in more obstinate cases the astringent gums or metallic salts are added. But, however proper such medicines may be in many, they are by no means applicable to all the cases, and much valuable time is lost by this careless mode of prescription." It is somewhat remarkable, however, that this last author indicates no other plan of treatment than that which he here condemns.

Our own experience, obtained upon a somewhat extensive field of observation, has convinced us that, in a great number of cases of menorrhagia, probably in the majority, whether recent or chronic, whether in plethoric or debilitated subjects, this malady is dependent, as stated by Dr. Copland, upon some inflammatory or actively congestive local condition, and is to be treated, in the first instance, by antiphlogistic regimen and medicines. Wherever there is pain, weight, heat, or a feeling of weakness in the back or loins, which, though aggravated by an upright posture and exercise, is not removed in bed or by rest, we consider a cooling diaphoretic system to be indicated; and the more so if there be a sense of heat about the thighs or other parts causing the passage of urine to be in any degree painful. The presence of clots of blood strengthen the presumption of the hæmorrhage being of an active rather than of a passive kind, at least where there are at the same time severe uterine pains. The leucorrhœal discharges which succeed or alternate with these floodings are not to be set down as marks of debility, but as common effects of the same causes acting in a mitigated degree. The sensations of patients as regards their own strength must not be allowed to mislead the medical attendant. It is a common thing to have women who are actually in a plethoric condition complaining of weakness; and it is still more frequent to have all uneasy sensations referred to debility for which there appears so satisfactory a reason: in fact, the weakness is often matter of inference rather than of experience.

In treating menorrhagia there are few cases in which we shall find it either necessary or desirable to take blood by venesection. It is only where the patient is very decidedly plethoric that such a proceeding will be requisite. More frequently, however, the relief of local congestion by cupping on the loins, or by leeches applied to the pubes or inner part of the thighs, will be found beneficial. But the use even of these means is not invariably demanded. One circumstance of primary importance is, that the bowels should be kept acting so freely as to prevent congestion in any part of the intestinal tube, and that evacuations should be obtained without any straining or forcing. The laxatives best suited to fulfil this indication will be found enumerated below*; and we give several formulæ for them because different ones suit different cases, and because they require to be changed and varied in the course of the same case. It must be sufficiently evident that if, as stated above, constipated bowels exert a prejudicial influence in producing, or in some cases, actually produce, the congested state of the lower parts

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* ℞ Fellis Bovini inspissata, ℈j. Mistur. Acac. Syrup. ā ʒj. Aquæ Pimentæ ʒix. Misce; fiat haustus omni mane vel p. r. n. exhibendus.	* Take Inspissated Ox Gall, one scruple. Mucilage. Syrup, of each one drachm. Pimenta Water, nine drachms. Mix, and make a draught to be taken every morning, or as occasion requires.
Vel, ℞ Olei Ricini, ℥ss. Alternis auroris ex lacte vel vehiculo quovis idoneo sumend.	*Or,* Take Castor Oil, half an ounce. To be taken on alternate mornings in milk or any convenient vehicle.
Vel, ℞ Infus. Sennæ Comp. ʒx. Sodæ Potassio-tartrat. ʒij. ad ℥ss. Tincturæ Sennæ Comp. Syrup. Papav. ā ʒj. Misce; fiat haustus ut supra dandus.	*Or,* Take Compound Infusion of Senna, ten drachms. Potassio-Tartrate of Soda, two drachms to half an ounce. Compound Tincture of Senna, Syrup of Poppies, of each a drachm. Make a draught to be taken as before.
Vel, ℞ Confection. Sennæ, ℥j. Pulv. Potassæ Bitartrat. Pulv. Sulphur. Loti, ā ʒij. Syrup. Rosæ, ℥j. Fiat electuarium, e quo sumatur cochl. j. minimum omni nocte vel p. r. n.	*Or,* Take Confection of Senna, an ounce. Bitartrate of Potash. Precipitated Sulphur, of each two drachms. Syrup of Roses, half an ounce. Make an electuary, of which let one teaspoonful be taken every night, or as occasion may require.
Vel, ℞ Pulv. Radic. Rhei, gr. xv. Pulv. Scammon. gr. x. Liquor. Potassæ, ♏xx. Olei Carui, ♏ij Misce; fiat massa in pil. vj. dividenda, e quibus sumantur ij. alt. aur. vel p. r. n.	*Or,* Take Powdered Rhubarb, fifteen grains. Powdered Scammony, ten grains. Solution of Potash, fifteen minims. Oil of Carraway, two minims. Make into a mass, and divide into six pills, of which let two be taken on alternate mornings, or occasionally.
Vel, ℞ Extr. Coloc. Comp. Pil. Hydrarg. Extract. Hyoscyam. sing. gr. x. Syrup. q. s. Misce; fiant pil. vj., sumantur ij. omni nocte vel alternis noctibus.	*Or,* Take Compound Extract of Colocynth. Blue Pill. Extract of Hyoscyamus, of each ten grains. Syrup, enough. Make six pills, and let two be taken every night, or on alternate nights.
Vel, ℞ Pil. Rhei Comp. ʒss. Fiant pil. vj., sumat j. vel ij. alternis noctibus.	*Or,* Take Compound Rhubarb Pill, half a drachm. Make six pills, and let one or two be taken on alternate nights.

of the body which results in menorrhagia, the relief of such a condition must do much to abate, if it do not altogether correct, the consequent hæmorrhage. We may remark that Dr. Rigby refers the far more frequent or exclusive occurrence of oöphoritis in the left ovary to accumulations in the sigmoid flexure of the colon, so that we have in this theory a sufficient reason for the practice which we insist upon, which is, moreover, sanctioned by the general assent of writers treating of the disease generally. Besides the employment of laxatives, with the view of removing all mechanical sources of congestion or irritation in the pelvic viscera, we are in the habit of prescribing diaphoretic or antiphlogistic remedies, which tend physiologically to equalize the capillary circulation. In combining colchicum in the formulæ which are given below*, we are not influenced by its specific virtues as exhibited in gout or rheumatism: we use it only as a depressing agent, by means of which the effects of other contra-stimulant medicines —such as antimony—may be enhanced, without producing the inconveniences that might arise from larger doses of the latter: or, again, it may be employed in combinations where objections on chemical grounds apply to the use of antimony. It takes with us the place which digitalis holds in the therapeutics of many, the latter drug being almost excluded from our prescriptions from our dread of its dangerous properties. The beneficial effects of colchicum, however, in uterine affections, and especially in dysmenorrhœa, have been recognised by Dr. Locock among others, so that we are the more encouraged in resorting to it in cases where our own experience has led to a presumption in its favour.

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* ℞ Liquor. Ammon. Acet. ʒiij.
Vini Antim. Potassio-tart. ♏xv—xx.
Tinctur. Colchici, ♏vj—x.
Infus. Aurantii Comp. ℥j.
Syrup Aurantii, ʒj.
Potassæ Nitrat. gr. vj.
Misce; fiat haustus ter die sumendus.

Vel,

℞ Liquor. Ammoniæ Acet. ʒiij.
Pulv. Ipecac. Comp. gr. v.
Tincturæ Colchici, ♏vj.—x.
Misturæ Camphoræ, ℥j.
Syrup. Croci, ʒj.
Potassæ Nitrat. gr. vj.
Fiat haustus ut supra dandus.

Vel,

℞ Infus. Krameriæ, ʒxj.
Pulv. Ipecac. Comp. gr. v.
Tincturæ Colchici, ♏x.
Syrup Aurantii, ʒj.
Potassæ Nitrat. gr. vj.
Misce.

* Take Solution of Acetate of Ammonia, three drachms.
Antimonial Wine, fifteen to twenty minims.
Tincture of Colchicum, six to ten minims.
Compound Infusion of Orange Peel, an ounce.
Syrup of Orange Peel, a drachm.
Nitre, six grains.
Make a draught to be taken thrice a day.

Or,

Take Solution of Acetate of Ammonia, three drachms.
Compound Ipecacuan Powder, five grains.
Tincture of Colchicum, six to ten minims.
Camphor Mixture, an ounce.
Syrup of Saffron, a drachm.
Nitre, six grains.
Make a draught, to be taken as before.

Or,

Take Infusion of Krameria, eleven drachms.
Compound Ipecacuan Powder, five grains.
Tincture of Colchicum, ten minims.
Syrup of Orange Peel, a drachm.
Nitre, six grains.
Mix.

Producing nausea by frequent doses of ipecacuanha combined with opium, every two or three hours (say three grains of the former with the fourth of a grain of the latter), has in some cases of menorrhagia proved highly useful, the flooding having ceased the moment that nausea was induced.

Ergot of rye is a remedy of a wholly different class, of the efficacy of which in stopping uterine hæmorrhage there is strong evidence. The fresh powder to the extent of five grains may be given three times a day with sugar. From its well known power of inducing contraction in the muscular structure of the uterus, it must be supposed to arrest hæmorrhage by causing constriction of the vessels as a consequence of pressure. Its use seems to us more appropriate when the hæmorrhage is of a passive rather than of an active character, where an atonic rather inflammatory state of the uterus exists. It is not desirable to continue its use very long; its effects, too, should be watched, so that it may be laid aside should any increase of pains or distress be observed. We have not been ourselves in the habit of employing it, and would always rather keep it in store as a dernier resort than administer it in the first instance.

When no symptoms denoting an increased action in the vessels of the uterus are present, and we suppose that the augmented secretion has arisen in consequence of a laxity of the vessels, besides keeping the woman in a recumbent posture, shunning much external heat, making use of refrigerants internally, and avoiding venery, costiveness, and the other remote causes, we should have recourse to sedatives and astringents, both of which may be used externally as well as internally. After these we should prescribe tonics and stimulants.

Linen cloths dipped in vinegar and cold water, and kept constantly applied to the back and private parts, have a powerful effect in many cases of uterine hæmorrhage. These means ought therefore always to be employed in those instances where menstruation is profuse. The liquor aluminis compositus of the Pharmacopœia, when diluted, may be used in the same way.

Opium has been much used internally in menorrhagia; and, where the patient experiences spasmodic pains in the uterus, it undoubtedly will prove a very valuable and useful medicine. On such occasions it may be given in small and frequently repeated doses, combined either with refrigerants or astringents; but as opium possesses the power of greatly relaxing the system when used liberally, it ought not to be administered in cases of general debility, unless under the circumstance just mentioned.

The astringents most employed in this disease are alum, catechu, and gum kino, which may be given as advised below*, or as prescribed under the heads of Hæmoptysis and Abortions. The sulphate of zinc and acetate of lead may be substituted in cases of profuse hæmorrhage.—(See Hæmoptysis.) We may give the latter in doses of one, two, or even three grains, every three or four hours, according to the urgency of the symptoms.

In those cases where the hæmorrhage is profuse, and resists the means already recommended, it will be proper to throw up astringent injections into the uterus from time to time. Any of those here prescribed † may be used on the occasion. If the discharge be so profuse as to create alarm for the safety of the patient, she should be freely exposed to cold air, and a lump of ice be introduced up the vagina.

Where menorrhagia proceeds from a scirrhous or ulcerated state of the uterus, all that can be done is to afford a temporary relief by administering opium in considerable doses. A combination of it with the extract of hemlock might possibly add some-

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* ℞ Aluminis, gr. xij. Gum. Kino, gr. viij. Confect. Rosæ, q. s. M. Ft. bolus, 3tiâ vel 4tâ horâ sumendus. Adde, pro re natâ, Opii, gr. ss.	* Take Alum, twelve grains. Gum Kino, eight grains. Confection of Roses, a sufficiency to form a bolus, which is to be taken every third or fourth hour. Occasionally add, Opium, half a grain.
Vel,	*Or,*
℞ Extract. Catechu, gr. xij. Aluminis purif. gr. x. Confect. Rosæ, q. s. M. Ft. bolus.	Take Extract of Catechu, twelve grains. Alum, purified, ten grains. Confection of Roses, a sufficiency to form a bolus.
Vel,	*Or,*
℞ Decoct. Cinchon. f. ℥jss. Aluminis, gr. xij. Tinct. Kino, f. ʒj. ——— Opii, ♏x. M. Ft. haustus, 4tis horis sumendus.	Take Decoction of Peruvian Bark, one ounce and a half. Alum, twelve grains. Tincture of Kino, one drachm. ——— Opium, ten minims. Mix them, and take the draught every four hours.
† ℞ Decoct. Cort. Querc. f. ℥vj. Aluminis, ʒjss. M. Ft. injectio.	† Take Decoction of Oak Bark, six oz. Alum, one drachm and a half. Mix them for an injection.
Vel,	*Or,*
℞ Zinc. Sulphat. gr. xv. Plumbi Acet. ʒj. Aq. distillat. Oj. M.	Take Sulphate of Zinc, fifteen grains. Acetate of Lead, one drachm. Distilled Water, one pint. Mix them.
Vel,	*Or,*
℞ Aluminis, ℈jiv. Zinc. Sulphat. gr. x. Aq. Rosæ, ℥viij. M.	Take Alum, four scruples. Sulphate of Zinc, ten grains. Rose Water, eight ounces. Mix them.
Vel,	*Or,*
℞ Infus. Gallæ contus. Oj.	Take Infusion of Oak Galls, one pint.

what to its palliative effect. Hyoscyamus may likewise be tried in the form of pill or tincture. Even in these cases, however, the internal use of astringents — such as the compound infusion of roses with an increased quantity of sulphuric acid, and small doses of alum (say five grains), or of the acetate of lead given in either of the forms before indicated — is of benefit to the patient, by diminishing the amount of discharge, and ought not, therefore, to be neglected. Where ulceration of the neck of the uterus of a non-malignant character exists, cauterization by the acid nitrate of mercury has been employed with success both by Dr. Balbirnie, and, more recently, by Dr. Bennet, in this country, as well as by French physicians. In relaxed states of these parts benefit has arisen from lightly touching them with the solid nitrate of silver.

In those cases where menstruation becomes profuse, continues longer than ordinary, or returns more frequently than is natural, in consequence of general laxity in the system, and not from inflammatory action, it will be proper for the patient, during its intervals, to enter on a course of tonic medicines,— such as cinchona, sulphate of quinine, the cortex cuspariæ, myrrh, and preparations of steel, which may be given as advised below*, or under the head of Dyspepsia.

To assist the effect of these remedies, she may make use of cold bathing, together with gentle horse exercise, and a generous nutritive diet with wine.

When, from great weakness and relaxation in the uterine parts, the patient is troubled with a profuse menorrhagia, or with fluor albus, she will often experience great relief from Tunbridge water, or any other such chalybeate spring; and as this state of local debility is very frequently a cause of abortion or barrenness, these waters have often been the means of removing such unpleasant circumstances.

But since hæmorrhage from the uterus is often accompanied with a degree of general fever, pains in the back and loins, and local irritation, the use of chalybeate waters in these cases requires much judgment and a proper discrimination.

On the subject of diet, Dr. Locock says, when speaking of that which is appropriate to persons of feeble constitutions, already perhaps reduced by a long continuance of so debilitating a malady, that it should be nourishing, but not stimulating; fluids and the watery vegetables should be taken but sparingly, only a small quantity of wine, of which claret or port is perhaps the best. In more plethoric individuals suffering from the disorder in a chronic form, he enjoins a bland and spare diet, and abstinence from wine; although, as he observes, the common remedy in families for every sort of menorrhagia is to drink rather freely of port wine. He recommends the flesh brush for equalizing the circulation as a substitute for exercise, because free from the risk of mischief from too much fatigue or exertion.

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* ℞ Decoct. Cort. Cinchonæ, f. ℥jss.
Tinct. Cort. Cuspariæ,
——— Card. C. āā f. ʒj. M.

Ft. haustus, ter in die capiendus
Adde, pro re natâ,
Acid. Sulph. dilut. ♏xij.

Vel,
℞ Misturæ Ferri comp. ℥vj.
Misce: sumat quartam partem ter die.

* Take Decoction of Peruvian Bark, one ounce and a half.
Tincture of Angustura Bark,
Compound Tincture of Cardamoms, of each one drachm.
Mix them for a draught, to be taken thrice a-day, adding occasionally,
Diluted Sulphuric Acid, eighteen drops.

Or,
Take Compound Iron Mixture, six ounces.
Mix: let the patient take a fourth part three times a-day.

He speaks of the success which he has obtained in cases of atonic menorrhagia, from the employment of the liquor potassæ arsenitis in very large doses; commencing with five or ten minims, and advancing to twenty-five minims thrice a day. We recommend that the trial should be made with half these quantities, and even then their effects must be carefully watched.

HÆMORRHOIDS, OR PILES.

The piles consist of small tumours situated on the verge of the anus, which are sometimes separate, round, and prominent; but sometimes the tumor consists only of one tumid or varicose ring surrounding it. In some cases there is a discharge of blood from these tumours, particularly when the patient goes to stool, and then the disease is known by the name of bleeding piles; and in others there is no discharge, when it is called blind piles.

These affections may be occasioned by habitual costiveness, plethora, indulgence in food of too stimulating a quality, too free a use of heating wines or spirituous liquors, excesses of various kinds, the suppression of some long-accustomed evacuation, and by a use of strong aloëtic purges; and are most apt to arise in those of a plethoric habit, and who lead a sedentary life. It is a curious fact, that the depressing passions will directly produce an attack of hæmorrhoids in persons predisposed to them. Pregnant women are frequently afflicted with the piles, owing to the pressure of the uterus upon the rectum, which interrupts the return of venous blood from that part, and produces the costive habit to which such women are usually liable. In common with Sir B. Brodie we entertain great doubts of the influence of aloëtic medicines in exciting piles.

The piles are sometimes accompanied by a sense of weight in the back, loins, and bottom of the belly, together with a pain or giddiness in the head, dryness in the mouth and fauces, general feverishness, sickness at the stomach, and flatulency in the bowels. On going to stool, a pungent pain is felt in the fundament, and tumours, varying in form and size from that of a pea to a hen's egg, are perceived to project beyond its verge. If these break, a quantity of blood is then voided, and a considerable relief from pain is obtained; but if they continue unbroken, the patient in that case experiences great torture every time he goes to stool, and feels an inconvenience even in sitting down on any hard seat. The tumours are sometimes so considerable as, by their pressure upon the bladder, to produce much irritation, and even pain, in voiding urine, while there is a frequent desire to do so.

Hæmorrhoids are by no means dangerous, but they often prove both troublesome and painful. In some instances they are to be regarded as salutary. Hæmorrhoidal tumours are sometimes attended with a considerable degree of inflammation, which, proceeding to a suppuration, terminates in sinuous ulcers or a fistula. Even when altogether internal, they impede by their bulk the passage of the fæces, give rise to very acute pain whenever the bowels are emptied, and gradually bring on that train of evils which necessarily follows long-continued constipation.

The general opinion as to the nature of hæmorrhoidal tumours is, that they are formed by a varicose distension of the hæmorrhoidal veins. Sir B. Brodie says, in a lecture published in the fifteenth volume of the Medical Gazette, at page 743:—"Those ultimate changes which take place in cases of piles are exactly similar to those which occur in connexion with varicose veins of the leg. You know that at first the veins of the leg are simply varicose, or dilated: that at last they become inflamed; that lymph is deposited in the cellular membrane surrounding them, and that at last there is a great mass of induration, in which the diseased vessels are as it were imbedded. So it is with the veins of the anus and rectum. At first they become simply dilated; repeated attacks of inflammation cause an effusion of lymph into the adjacent cellular texture, and then the pile appears like a solid tumour; in the centre of which, however, you still find the dilated vein in which the disease originated."

In the treatment of piles, due attention should be paid to the cause from which they have arisen: and as costiveness is one of the most frequent, the bowels ought to be kept open and regular by medicines which will prove gently laxative*, without irritating the rectum; and as a habit may be acquired, it will be right for the patient to observe stated times in the day for endeavouring to obtain motions, but without straining. Should none be procured by the aid of the laxative medicines, they may be excited by clysters of tepid water with soap and oil.

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* ℞ Confect. Sennæ, ℥ij.
Pulv. Jalap. ʒij.
Potassæ Nitrat. ʒjss.

Syr. Rhamni, q. s. M.
Ft. electuarium, de quo sumat magnitudinem juglandis pro re natâ.

Vel,

℞ Sulph. Lot. ℥j.
Confect. Sennæ, ℥ij.
Potassæ Bitart. ʒiij.
Syrup. Rosæ, q. s. M.
Ft. electuarium.

* Take Confection of Senna, two ounces.
Powdered Jalap, two drachms.
Nitrate of Potass, one drachm and a half.
Syrup of Buckthorn, a sufficiency to form an electuary, of which take the bulk of a walnut occasionally.

Or,

Take Washed Sulphur, one ounce.
Confection of Senna, two ounces.
Bitartrate of Potass, three drachms.
Syrup of Roses, a sufficiency to make the whole into an electuary.

When the tumours are attended with much pain and a considerable degree of inflammation, it may be advisable to apply a few leeches; after which, pledgets wetted in a weak solution of the acetate of lead, or sulphate of zinc, may be laid on; the patient taking care after each stool to anoint the parts with some kind of emollient ointment.* In these cases, fomentations and poultices are likewise employed; but the former are preferable, except in those cases where a suppuration has commenced. This, however, should be prevented, if possible, as a fistula is sometimes the consequence thereof. Injections of cold water up the rectum have sometimes afforded great relief when even leeches and opiates have failed.

In severe cases, accompanied by great pain and inflammation, a temporary relief may be afforded by puncturing the tumour with a lancet, so as to unload the distended vessels, and evacuate the effused blood.

Mr. Vincent, in his Observations on some Parts of Surgical Practice, published in 1847, speaks very favourably of this plan, for he says at page 168,—"If piles are exceedingly distended and painful, the best treatment is to plunge a lancet deep into them and then squeeze out all the coagulum. This squeezing is absolutely necessary; for it is the only effectual way to ensure the prevention of the bleeding, as well as the subsidence of the pile. External

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Vel,	*Or,*
℞ Ol. Ricini, f. ʒvj.—℥j.	Take Castor Oil, six drachms to one oz.
Vel,	*Or,*
℞ Pulv. Jalapæ, ℈j. Potassæ Bitartrat. ℈ij. M. Ft. pulv. pro dos.	Take Powdered Jalap, one scruple. Bitartrate of Potass, two scruples. This powder to be taken as a dose.
* ℞ Unguent. Cetacei, ℥ij. Opii, ʒj. M. Ft. unguentum.	* Take Spermaceti Ointment, two ounces. Opium reduced to Powder, one drachm. Mix them well, and use the ointment.
Vel,	*Or,*
℞ Cerati Plumbi Acetatis, ℥ij. Opii, ʒij. M.	Take Cerate of Acetate of Lead, two ounces. Opium, two drachms. Mix them.
Vel,	*Or,*
℞ Unguent. Cetacei, Cerat. Plumbi Acetatis, āā ℥ss. Pulv. Opii, ʒss. M.	Take Spermaceti Ointment, Cerate of Acetate of Lead, of each half an ounce. Opium in powder, half a drachm. Mix them.

piles," he adds, "may be freely cut off, and if the blood be carefully squeezed out no bleeding need be feared." We are not told whether phlebitis or purulent infection is as little to be dreaded.

The easy action of the bowels is an object not to be lost sight of in cases of piles, and for attaining this several formulæ have been already given, and others may be found in the article on Hæmorrhagia. We have often found a combination of about ten grains of carbonate of magnesia, with as much precipitated sulphur suspended in cinnamon water by means of a little of the compound tragacanth powder, and taken twice or thrice a day produce much relief. At the same time on alternate nights we have given a grain of calomel, if there were reason to suspect inactivity of the liver, or if the mixture alone proved not sufficiently laxative. We have found, too, a powder consisting of about ten grains of guaiacum, nitre, and sulphur, taken once or twice a day in honey or treacle, produce a gentle action of the bowels and much decrease of the irritation about the rectum. Sir B. Brodie and others recommend the balsam of copaiba in half drachm doses with fifteen minims of liquor potassæ rubbed down with two or three drachms of mucilage and cinnamon water, for soothing irritation and keeping the bowels gently open at the same time. In cases where there is less pain, copaiba, with so much cubebs as will give it the consistence of an electuary, may be swallowed to the extent of half a teaspoonful wrapped up in wafer paper, once or twice a day; or a scruple of cubebs alone may be taken thrice a day, the use of either of these being alternated with that of the confectio piperis nigri, or Ward's paste. Care must be taken, however, that the bowels are kept moderately free, and that these substances do not accumulate in the intestines.

If a prolapsus ani attends the piles, the part is carefully to be replaced each time after going to stool, by laying the patient in a horizontal posture, and pressing gently with the fingers till the reduction is effected. Its return is to be prevented by avoiding the occasional causes as much as possible, among which costiveness and straining at stool are those most to be guarded against, and will be best obviated by the means indicated just above. In addition to these astringent enemata should be employed; and Mr. Vincent tells us that he has cured this complex malady by the injection of a solution of sulphate of iron, containing a grain to the ounce used daily, even without recourse to excision of the piles. Pledgets dipped in a strong decoction of galls, or oak-bark, may be kept constantly to the parts as an external astringent, and they may be anointed from time to time with an ointment* possessing similar virtues. As a general tonic, cold bathing may be employed with advantage.

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* ℞ Adipis præparat. ℥j.
Pulv. Gallarum, ʒij.

Opii, ʒj. M.
Ft. unguentum.

* Take Prepared Lard, one ounce.
Oak Gall, in fine powder, two drachms.
Opium, one drachm.
Mix them.

An internal use of Harrowgate water is a remedy from which great benefit is derived in the piles. The advantages of sulphur, as a mild unirritating purgative, and one which seems to continue its operation through the whole of the intestinal tube, has long established its virtue in those hæmorrhoidal affections that require this evacuation; and the neutral salts, with which it is united in this mineral water, cannot but contribute to its efficacy.

In those cases where the hæmorrhage is so profuse as to occasion great loss of strength, we must have recourse to astringents both internally and externally, as has just been advised, taking care to obviate costiveness by some gentle laxative. The acetate of lead, conjoined with opium, will be found a powerful remedy in this as in most other hæmorrhages. Confinement to a horizontal posture, with the most perfect quietude, will be advisable in such cases. If the patient can lie on his face so much the better. He should be lodged in an airy chamber, and his bed be lightly covered.

If the bleeding vessel be within reach, it will be best to secure it by ligature, in the way presently to be mentioned. In other cases, as when it proceeds from tumours seated high up, we may throw up cold water in such a small quantity as just to fill the rectum, or some astringent injection*, if it cannot be moderated by the means just recommended.

The means above described will comprehend all that is requisite to be done in mild cases of the disease, and will probably give much relief in all, even in those in which circumstances exist to forbid an attempt at effecting a radical cure. Such circumstances as pointed out by M. Dupuytren and Mr. S. Cooper, are the existence of organic disease of the intestines, liver, and especially of

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Vel,	*Or,*
℞ Cerat. Plumbi Acetatis, ℥j.	Take Cerate of Acetate of Lead, one ounce.
Pulv. Gallar. ʒij. M.	Oak Gall, in powder, two drachms. Mix them.
* ℞ Cort. Querc. contus. ℥j. Aq. Fontan. Oij. Coque ad Oj. Coluturæ adde	* Take Decoction of Oak Bark, one pint.
Aluminis, ʒij. Tinct. Opii, f. ʒj. M. Ft. injectio.	Alum, two drachms. Tincture of Opium, one drachm. Mix them for an injection.
Vel,	*Or,*
℞ Zinc. Sulphat. ʒj. Aq. Rosæ, Oj. M.	Take Sulphate of Zinc, one drachm. Rose Water, one pint. Mix them.
Vel,	*Or,*
℞ Gallæ contus. ℥ss. Aq. fervent. Oij. Col.	Take Bruised Oak Galls, half an ounce. Hot Water, two pints. Infuse them, and strain off the liquor.

the lungs; and the state of pregnancy in women. It is in reference more especially to the different modes of extirpating them that piles require to be distinguished as internal or external,—that is, into such as have their attachments above or below the sphincter ani. The mere fact of its outward protrusion does not constitute it an external pile, if its base when in its natural position would be above this part.

Now the rule laid down by Sir B. Brodie is, that external piles may be cut off either with the scalpel or scissars, both because the application of a ligature to tumors enveloped by skin is exceedingly painful; and because there is a facility of restraining any undue hæmorrhage in parts which are placed thus externally. In the case of internal piles, on the contrary, the ligature is to be preferred where removal is deemed necessary, because the pain involved in its application is much less, and because the risk of hæmorrhage is thus more readily obviated, where the occurrence of bleeding would be a more formidable accident. The removal of external piles, writes Sir B. Brodie at page 843 of the work before quoted, is seldom necessary; they are generally complicated with internal piles, and if you cure the former, the latter, which are a continuation of the same veins, will be cured also. However, there are cases in which it is right to remove external piles by incision. For example, where they are enlarged and inflamed, so that it will take a great deal of time to subdue the inflammation, and the patient is all the while suffering pain, he may be relieved at once by two or three snips of curved knife edged scissars. Or if an abscess has formed in an external pile, which bursts, discharges and closes at the orifice, then bursts and discharges again, it may be worth while to cut off the pile and the abscess with it. You take hold of the pile with a double tenaculum, elevate it a little from the base, and then snip it off. If there be a little artery bleeding considerably, you take up the vessel as you would on any other cut surface. Internal piles may sometimes, when small, be removed in the same way. But wherever, he goes on to say, there are large internal piles which protrude either constantly or occasionally, you ought not to remove them except by ligature. For the purpose of getting the piles well protruded, you may make the patient sit over a pan of hot water, which will relax the sphincter muscle, and at the same time cause the veins of the rectum to become filled with blood. If this be not sufficient, let him have a pint or two of warm water thrown up as an enema, and when that comes away the piles will probably descend with it. If the pile be of very small size, you may just take it up with a double tenaculum, draw it out; and tie a ligature round its base. But if the piles be of large size, you should have a large curved needle armed with a double ligature, pass the needle, carrying the ligature with it through the base of one of the piles, and then cut off the needle. The double ligature is now divided into two single ligatures, which are tied round the base of the pile, one on one side, the other on the other with a single knot. Treat all the piles in this way, and let your assistant draw the several threads out of your way, holding them over the nates. When each of the piles is secured in this manner, cut off the convex portion of each so as to make an opening into the cavity of the convoluted vein that forms it. Thus you take off the tension produced in the pile by the blood which it contains, and are enabled to draw the ligature tighter than before. It should be drawn as tight as possible, tied in a double knot, and cut off close to the knot. And then the piles, ligatures, and all should be returned into the rectum. Care must be taken that no skin be included within a ligature. An active dose of rhubarb should precede the operation, so that the bowels may be thoroughly cleared before it is performed, and the patient be allowed to go without an evacuation for two or three days afterwards. When time has elapsed for the healing the sores left after the ligatures have come away, Sir B. Brodie further recommends that the patient should take some lenitive electuary and sulphur every night, so as to keep the bowels gently open; and should use a lavement of cold water every morning, in order to prevent a recurrence of the disease.

Mr. Vincent remarks in his book before quoted that surgeons have been deterred from cutting off piles from fear of hæmorrhage. It is to be remembered that if the coagulum be left in them, they will go on bleeding. I have, with few exceptions, adopted the operation of excising internal piles; injecting afterwards a little of a solution of sulphate of iron, containing one grain to the ounce, so that the injection may be retained, in which case it will hardly ever fail to prevent the bleeding.

Sir B. Brodie points out how a natural cure of an internal pile, protruding outwardly, has sometimes arisen from the constriction of the sphincter acting like a ligature, causing it to slough off and undergo those changes which it is the object of the surgeon to obtain artificially in the manner described above.

In those cases where the discharge has become habitual, arising from plethora, this state of fulness must be prevented by moderate exercise on foot or in a carriage, by the use of a spare diet, by taking cooling purgatives from time to time, and by carefully avoiding all strong liquors.

From a sudden suppression of the hæmorrhoidal discharge, it not unfrequently happens that a severe headach, coma, or acute pain in the belly or even chest takes place, and sometimes a hæmorrhage from the lungs or stomach breaks forth. In all such cases, a full bleeding or two from the arm will be necessary; and we may employ at the same time injections into the rectum of warm stimulating fluids, making the patient sit over the steam arising from warm water. If these means fail, the application of leeches may also be resorted to. Due attention must be paid to diet and regimen.

Those who are afflicted with piles should shun all such causes as may either increase the determination of blood to the hæmorrhoidal vessels, or prevent its return back from them; but more particularly a constipated state of the bowels; as also riding on horseback.

During the continuance of this complaint, the diet should be cool and nutritious, consisting principally of vegetables, ripe fruit, jellies, broths, &c. Fermented and spirituous liquors will be hurtful, and therefore the patient should only drink cooling acidulated liquors, water, or toast and water.

If the disease is recent, it may sometimes be relieved by mild means, — such as the introduction of a large-sized bougie up the rectum. Where the radical operation is not thought advisable, or there may be any other objection to its performance, we ought to make trial of the bougie, as it has been found very considerably to relieve strictures in the rectum, and such like inconveniences produced by hæmorrhoidal excrescences.

When, in consequence of piles, the rectum becomes so much affected as to threaten the patient with a fistula, we may recommend a use of Dr. Ward's celebrated paste, or the confectio piperis nigri of the Pharmacopœia.

ORDER V.

PROFLUVIA, OR FLUXES, WITH PYREXIA.

Pyrexia, with an increased excretion, not naturally bloody, constitutes this order of diseases.

CATARRHUS, OR A COLD.

A cold consists in an inflammation of the mucous membrane of the nose, throat, and bronchi, accompanied with a redness and watering of the eyes, hoarseness and a sense of rawness in the trachea, cough, with an oppression about the chest, a difficulty of breathing, and not unfrequently with a slight degree of pyrexia.

It seems best to consider under the present head that common affection in which the inflammation of the mucous membrane of the air passages does not spread beyond the larger subdivisions of the bronchi; having already in a separate article treated of those diseases, of the minuter ramifications for which the term bronchitis appears both more appropriate and to have obtained in the present day a more general currency.

The disorder now spoken of has been not only often witnessed, but often experienced by every one who has past his earliest infancy in its varying degrees of severity and extent. As it implicates the nostrils it constitutes the coryza of authors: its extension to the membranous lining of the frontal sinus produces the weight or head-ach called gravedo; spreading to the fauces and thence to the ears, it causes more or less deafness; advancing to the larynx and windpipe, it gives rise to hoarseness and cough, and tightness or pain at the upper part of the chest; while there is more or less of aching in the limbs and body generally; and more or less of thirst and loss of appetite, of heat of skin, and chilliness, especially at the commencement of the attack.

It attacks persons of all ages and constitutions, but more particularly the weakly; and it may take place at any time of the year when there are sudden changes of the weather from hot to cold, and *vice versâ.* In the former instance, the application of cold to the body seems evidently to be the remote cause of the disease; and in the latter it appears to depend on a specific poison, having in the years 1732 and 1733 spread in a progressive manner over the whole of Europe and part of America, and in 1785 and 1803 over the whole of Britain. When the disease has prevailed epidemically in this manner, the term influenza has been applied to it. Of such visitations we have had recent examples in 1833, 1837, and 1847.

The proximate or immediate cause of the catarrh seems to be an increased afflux of fluids to the mucous membrane of the nose, fauces, and bronchi, in consequence of some degree of inflammation in these parts.

Catarrh is to be distinguished from measles by the mildness of the febrile symptoms, and by the absence of the eruption, and of many of the appearances which accompany the latter.

The disease usually comes on with a dull pain, or sense of weight in the forehead, a redness of the eyes, and a fulness and heat in the nostrils; which symptoms are soon followed by the distillation of a thin acrid fluid from these parts, together with a soreness in the trachea, hoarseness, frequent sneezing, some difficulty of breathing, a dry cough, loss of appetite, general lassitude over the whole body, and chilliness; towards evening the pulse becomes considerably quickened, and a slight degree of pyrexia arises.

In the progress of the disorder, the cough is attended with an excretion of mucus, which at first is thin, white, and expectorated with some difficulty; but, becoming gradually thicker, and of a yellow colour, is at length brought up with greater ease and less coughing.

Even where there is not much affection of the system, it often happens that the evening paroxysm is considerably increased; and, from restlessness and frequent coughing, the patient is prevented from sleeping till the morning, at which time a crisis takes place for the present, and he then remains tolerably easy until the return of the evening paroxysm.

When the secretion of mucus ceases, the inflammation goes off also, so that a natural cure almost always arises in the disease.

Catarrh is seldom attended with fatal consequences, except when it either arises in elderly persons, attacks those of consumptive habit, or has been much aggravated by some fresh application of cold or by improper treatment; and it usually terminates in the course of a few days, if not neglected, by an increased expectoration or a spontaneous sweat. In some instances, particularly where the disease has been neglected at its onset, or has been frequently repeated, it lays the foundation of phthisis pulmonalis, or gives a tendency to asthma and hydrothorax. In others it induces a bronchitis becoming habitual, and accompanied by severe dyspnœa, particularly in the winter; and may even terminate fatally from the accession of a sharp frost; the usual complaint passing on to the peripneumonia notha, on the one hand, and producing suffocation by the profuse effusion of viscid phlegm into the air-cells and tubes; or, on the other, putting on the more active form of common peripneumony. Very old persons are apt to be carried off by comparatively moderate attacks of catarrh, which seem to wear out their feeble vitality merely by the slight interruption to the function of respiration which the phlegm secreted in the bronchial passages occasions; and they quietly sink into the sleep of death, without any urgent symptom or appearance of distress.

The inner membrane of the trachea usually appears on dissection, in fatal cases of catarrh, to be much inflamed, and its cavity to be filled with a considerable quantity of mucous fluid. The same morbid state is likewise communicated to the lungs, which seem loaded with matter of a similar nature, producing suffocation. The appearances after death will however vary in different cases according to the superadded malady which is its cause, and must be sought for under the articles Bronchitis, Peripneumonia, and Pleuritis.

In mild attacks of this disease it may not be necessary to have recourse to the aid of medicine. In general, it will be sufficient to confine the patient to bed, and to make him use an abstemious regimen, and drink plentifully of warm diluent mucilaginous liquors, — such as barley-water, thin gruel, &c., acidulated with a small quantity of lemon-juice or crystals of tartar, — and having recourse to the pediluvium at bed-time.

A cold at its commencement may often be warded off or cut short by resorting to one or two doses of some stimulating diaphoretic. This can generally be safely done if the nostrils and forehead be the parts chiefly affected, and there be little or no constriction about the chest. Such a plan is not uncommonly resorted to by patients themselves, who will take their tumbler of hot wine and water or spirits and water on going to bed, and find themselves much relieved on awaking by the free perspiration which has been produced during the night. We scarcely know whether this popular method be not on the whole as good as any of the kind; some small inferiority in its curative efficiency being almost counterbalanced by its greater pleasantness. For those who think otherwise we give below Dr. Copland's formulæ for a draught and bolus* to be employed with a like intention. These expedients are often useful, as preventing that interruption of business which might otherwise be necessary.

If the above expectant and stimulant systems have been omitted or have failed, or been deemed insufficient or inapplicable, then a somewhat different plan may be pursued with confident expectation of speedy relief. A simple uncomplicated cold never requires the use of bloodletting of any kind; a mild antiphlogistic treatment, including moderate action on the bowels†, is soon followed by restored health. The use of wine and fermented liquors should be interdicted during the treatment, but meat need not be altogether withheld: indeed in some cases the debility is so great as to render its allowance necessary for supporting the strength. Other febrifuge mixtures‡ are prescribed below, which may be employed instead of the preceding, either without any aperient when the bowels act sufficiently of themselves and their secretions are natural, or with an occasional purgative, as the state of the patient may seem to require.

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* ℞ Spirit. Ætheris Nitrici, ʒj.
Tinctur. Camphoræ comp. ʒj.
Misturæ Acaciæ, ʒij.
Spirit. Anisi, ʒj.
Liquor. Ammoniæ Acet. ʒij.
Misturæ Camphoræ, ℥j.
Syrup. Tolutani, ʒj.
Misce; fiat haustus horâ somni sumendus.

Vel,

℞ Camphoræ rasæ, gr. iij. ad gr. vj.
Ammoniæ Sesquicarb. gr. vj.
Pulv. Ipecac. gr. j.
Extract. Hyoscyami, gr. vj.
Conserv. Ros. q. s. ut fiat bolus horâ somni sumend.

* Take Spirit of Nitric Æther, one drachm.
Compound Tincture of Camphor, one drachm.
Mixture of Acacia, two drachms.
Spirit of Anise, one drachm.
Solution of Acetate of Ammonia, two drachms.
Camphor Mixture, an ounce.
Syrup of Tolu, one drachm.
Make a draught to be taken at bedtime.

Or,

Take Scraped Camphor three to six grains.
Sesquicarbonate of Ammonia, six grains.
Powdered Ipecacuanha, one grain.
Extract of Henbane, six grains.
Conserve of Roses enough to make a bolus to be taken at bedtime.

† ℞ Liquor. Ammoniæ Acet. ʒiij.
Vini Antim. Potassio-tart. ♏xv.
Infus. Aurantii comp. ℥j.
Magnesiæ Sulphat. ℈j. ad ʒss.
Syrup. ʒj.
Misce; fiat haustus ter die sumend.

† Take Solution of Acetate of Ammonia, three drachms.
Wine of Antimony, fifteen minims.
Compound Infusion of Orange Peel, an ounce.
Epsom Salts, a scruple to half a drachm.
Syrup, one drachm.
Mix, for a draught to be taken thrice a day.

‡ ℞ Succ. Limon. f. ℥jss.
Ammon. Subcarbonat. ʒss.
Aq. Fontan. f. ℥v.
Antimon. Tartarizat. gr. ss.
Syrup. Tolutan. f. ℥ss. M.
Ft. mistura, cujus sumat cochl. larg. ij. ter die.

‡ Take Juice of Lemon, one ounce and a half.
Subcarbonate of Ammonia, half a drachm.
Pure Water, five ounces.
Tartarized Antimony, half a grain.
Syrup of Tolu, half an ounce.
Of this mixture two large spoonfuls are to be taken three times a day.

The means here pointed out will be amply sufficient for the relief of a catarrh in the limited sense which we have here attached to that term; and will often prevent the supervention of some more formidable affection of the lungs, or more permanent pains in the limbs. In some cases, however, without difficulty of breathing, and with little or no expectoration, there may be a persistence of a troublesome, and, as it is popularly called, hacking, cough. This is not unfrequently occasioned by relaxation of the uvula and parts about the throat, and will yield to the use of astringent or stimulating gargles*, or to some mild tonic and expectorant medicine, such as that prescribed below †: and the same is true of the cough sometimes produced by continued increase of secretion from the

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Vel,	*Or,*
℞ Liquor. Ammon. Acetat. f. ℥ss.	Take Solution of Acetate of Ammonia, half an ounce.
Mistur. Camphoræ, f. ℥j.	Camphorated Mixture, one ounce.
Vini Antimon. Tartarizat. ♏xij.	Wine of Tartarized Antimony, twelve minims.
Syr. Althææ, ʒij. M.	Syrup of Marshmallow, two drachms.
Ft. haustus, sextis horis adhibendus.	Mix them as a draught, to be given every six hours.
Vel,	*Or,*
℞ Camphoræ, gr. iv.	Take Camphor, four grains.
Pulv. Antimon. gr. ij.	Antimonial Powder, two grains.
Confect. Rosæ, q. s. M.	Confection of Roses, a sufficiency to form a bolus, which may be taken as frequently as the former.
Ft. bolus.	
* ℞ Aluminis, ʒj.	* Take Alum, one drachm.
Acid. Sulph. dilut. ʒiss.	Dilute Sulphuric Acid, one drachm and a half.
Tincturæ Myrrhæ, ℥ss.	Tincture of Myrrh, half an ounce.
Mistur. Acaciæ, ℥iij.	Mixture of Acacia, three ounces.
Aquæ, ℥viiiss.	Water, eight ounces and a half.
Misce; fiat gargarisma bis die vel sæpius utend.	Mix, and make a gargle to be used twice a day or oftener.
Vel,	*Or,*
℞ Tincturæ Capsici, ʒij ad ʒiij.	Take Tincture of Capsicum, two to three drachms.
Mistur. Acac. ℥iij.	Mixture of Acacia, three ounces.
Aquæ Rosæ, ℥v.	Rose Water, five ounces.
Aquæ, ℥iv.	Water, four ounces.
Misce.	Mix.
† ℞ Infus. Rosæ comp. ʒx.	† Take Compound Infusion of Roses, ten drachms.
Aceti Scillæ, ♏xxv.	Vinegar of Squills, twenty-five minims.
Magnesiæ Sulphat. ℈j. at ʒss.	Epsom Salt, a scruple to half a drachm.
Tincturæ Lavand. comp. ʒj.	Compound Tincture of Lavender, a drachm.
Misce; fiat haustus ter die sumend.	Mix for a draught to be taken thrice a day.
Nonnunquam singulis his haustibus granum unum Quinæ Disulphatis adjicere juvabit, Magnesiæ Sulphate pro re natâ auctâ vel diminutâ vel omissâ.	It will be sometimes desirable to add a grain of Disulphate of Quinine to each of these draughts, the Epsom salts being increased or diminished in quantity or omitted altogether as occasion may require.

mucous membrane of the trachea and large bronchi. If there be no cough, or pains, but merely debility, these may be removed by the same draught or by an allowance of bitter beer or porter at dinner, with or without the administration of one of the bitter infusions, as that of calumba, cascarilla, hop, or gentian.

If in the progress of a common cold, the lungs become extensively affected, as evinced by great difficulty of breathing, and fixed pains in any part of the chest; or if, again, there be a persistence and aggravation of the pains in the body and limbs, or head, the disease will then have to be treated not as a simple catarrh, but in the manner detailed under the several articles upon bronchitis, pneumonia, pleurisy, or rheumatism, according to the form which the superadded malady may assume.

Before entering into an account of the symptoms which have marked any particular example of the epidemic catarrh in influenza, and which, with slight variations, belong to them all, we may mention some circumstances which relate to the origin and course of these visitations generally. We are told by Dr. R. Williams, that, towards the close of the twelfth and thirteenth centuries, it was observed that catarrh was not only endemic in particular districts, but that it occasionally spread over large portions of country. It appears, that the historian Du Thou was the first who illustrated the subject in his description of the epidemic catarrh of 1510, as it occurred in Italy. The Committee of the Royal College of Physicians, whose account of the influenza of 1782 is published in the third volume of the Transactions of that body, mention the years 1510, 1557, 1580, 1587, 1591, 1675, 1709, the latter end of 1732 and beginning of 1733, 1743, 1762, 1767, and 1775, as periods in reference to which there were records of the prevalence in Europe of a disease similar to that which they were describing. Other examples of a like visitation occurred in the years 1782, 1803, 1833, 1837, and 1847. The returns, therefore, of these epidemics have been spread over a considerable space of time, and have not been few in number.

The term influenza originated in Spain or Italy, and was first applied to the malady in 1775, since which date it has been more extensively adopted. Dr. Williams says of the epidemic catarrhs of the eighteenth century that they assume a new interest from observation having determined, as a law of their progression, that, arising sometimes as far east as Asia, and at all times proceeding from the north-east of Europe, they have advanced westward till they have reached England, when the stream has broken into two branches, the one crossing the Atlantic to America, while the other has retrograded south-east, through France, Spain, and Italy, till it has at length been lost in the Mediterranean, a course said to resemble that pursued by the cholera Indica. A like course has also been traced as belonging to the more recent influenzas of the nineteenth century. A peculiarity remarked upon both by Drs. Holland, Williams, and others, is the nearly equal duration of the epidemic season of the malady in every country of from four to six weeks. Regarding the influence of weather, the first of these authors states, as a summary of the facts bearing upon this point, "first, that all obvious conditions of weather being the same in a certain number of places, the disease appears in them at very different times, or in some not at all; and, secondly, that it occurs in various places, or in different years at the same place under states of season and weather wholly opposed to each other." Whether or not the disease be of an infectious nature, is a question upon which some doubt may be entertained; yet the great preponderance of medical opinion leans to the negative conclusion. The poison of influenza, according to Dr. Williams, produces a slight fever; but its more specific actions are on the ocular, nasal, faucial, and bronchial mucous membranes, causing coryza, bronchitis, and angina. The tertiary action of the poison is on the substance of the lungs, causing pneumonia. The duration of this disease is from three or four days to a fortnight or three weeks.

The catarrhal fever, known by the name of influenza, which prevailed so universally in most parts of this kingdom in 1803, as well as in France, where it was called *la grippe*, first shewed itself in London towards the latter end of the month of February, when a damp and mild state of the atmosphere had succeeded to severe cold, and when this, again, had been followed, towards the beginning of March, by frost and keen easterly winds.

Like preceding epidemics of the same kind, this disease exhibited various degrees of morbid affection, having been in some instances so slight as not to incapacitate persons from following their ordinary occupations and pursuits, and scarcely to require the aid of medicine; while in others the attack was of so severe a nature as to endanger life, and even to destroy it. To young children and elderly people it proved very fatal indeed; but more particularly so to the latter. Those likewise of a middle age, who either laboured under habitual asthma, or had any predisposition to phthisis, experienced its dire effect.

It was generally preceded by chilliness and shiverings, which were succeeded by some degree of heat, pains in the head, a discharge from the eyes and nostrils, severe sneezing, hoarseness, and cough. In the course of a few hours the headach became much increased, as well as the heat; the pulse was quickened, but small; the breathing was difficult and oppressed, or transitory stitches across the chest were felt. Some patients complained of pains in the shoulders and limbs, very much resembling chronic rheumatism, and there were instances in which the difficulty of breathing might be, in part, attributed to a similar affection of the intercostal muscles. The tongue was usually white; the thirst considerable; the bowels were costive; the urine was high-coloured and clear; and very frequently there was nausea at the stomach, with more or less of vomiting.

Towards the second or third night the cough became greatly aggravated, and was strong and almost incessant, being usually accompanied, even on its first coming on, with an expectoration of thin sharp mucus. The evening paroxysm of fever was likewise more severe, being attended with extreme anxiety and restlessness, as well as considerable heat, and often with a great confusion in the head, and rambling. At this stage of the disease the pulse was usually from 100 to 120 strokes in a minute. Towards the morning there was commonly a remission of the febrile symptoms; but the cough continued urgent, and greatly interfered with the patient's getting any sleep after this time.

Where gentle perspirations came on early, and the bowels were kept open, the fever usually declined about the fifth or sixth day, and the urine, which before was high-coloured and clear, now became turbid, or deposited a copious sediment; but the cough continued for many days, the sputum being, however, of a milder quality and thicker consistence, and the expectoration more free. Depression of spirits, languor, and debility, which were universal attendants on this epidemic, together with restless nights, harassed the patients for a considerable length of time after the decline of the fever.

Such was the common form of the disease; but its modifications were extremely numerous; for in some instances there was a violent headach with a swelling of the eyes, or inflammation of the conjunctiva, or pains in the limbs, with but little catarrhal affection; in others, the throat was principally affected; and in others, again, a peripneumonic condition existed. In a few instances the fever assumed the typhoid type.

In the treatment of the influenza, bleeding was not much employed, and it was only had recourse to in those cases where the symptoms of pneumonia were very urgent, and the patient complained of great difficulty of breathing or an acute pain in the side. Where dyspnœa prevailed, the application of a blister to the chest usually afforded considerable relief.

If nausea was complained of at the commencement, a gentle emetic proved serviceable; and where costiveness existed — as was usually the case — it was necessary to give some gentle laxative.

When there was no great degree of heat or fever present, it was by no means requisite to keep patients in bed: in such cases, confinement to their chamber, with plentiful dilution, and a spare regimen, were sufficient; but when the febrile symptoms ran high, it was necessary to keep them in bed, and to administer diaphoretics. Small doses of the pulvis antimonialis, assisted by a solution of some neutralised salt, and given every three or four hours, seldom failed to excite a gentle determination to the surface of the body. Further than this was not proper; for immoderate sweating, particularly at the decline of the disease, was sure to prove injurious, by adding to the languor and debility.

Some advantages were derived from a free use of the compound decoction of barley, and solutions of gum acaciæ, with the addition of a little syrup of lemons, in those cases where the fauces and throat were affected by rawness and soreness. An affection of the throat was of rather frequent occurrence in the epidemic of 1847. In one instance, it was for a time so severe, as altogether to prevent deglutition; and on inspection, the membrane of the pharynx and fauces was seen to be deeply reddened, yet without ulceration or swelling, or any accumulation of adhesive mucus about the parts. In this case, the difficulty of swallowing was promptly removed by the application of six leeches to the throat, followed by a brisk purgative. In other cases we have seen a like result follow the application of a solution of nitrate of silver (containing ten grains to the ounce) to the parts affected, by means of a camel's hair brush. This measure is productive of no pain or inconvenience, and may therefore be resorted to several times during the day, till the healthy condition of the fauces is restored.

In the epidemic of 1782, it was remarked that nothing was so successful in mitigating the cough, as opening the bowels with a gentle purge, and afterwards giving a slight opiate at night, and this treatment would have suited well many of the milder cases in the more recent epidemics.

Towards the decline of the disease, where the expectoration was both viscid and difficult, squills were employed with benefit. In some instances, however, we have thought ipecacuanha a preferable remedy; and we find it observed of the disease of 1782, that in it small doses of ipecacuanha wine, given three or four times a day, was found to be of use in moderating spontaneous purging and promoting expectoration. We have sometimes given squill and ipecacuan in small doses together, and, as it has seemed, with advantage.

To counteract the languor and debility which invariably attended this epidemic, it was necessary, during a state of convalescence, to have recourse to tonics, — such as a decoction of the bark of cinchona, with the mineral acids; or some preparation of myrrh, with an infusion either of calumba root or gentian, various formulæ of which are inserted under the head of Dyspepsia.

We find Dr. Holland an advocate for the administration of quinine in influenza, stating that any inference that might be drawn as to its use from the tendency in the disorder to intermittent actions is fully justified by the actual results. But we have neither remarked ourselves, nor found it noticed by others, that the phenomena of influenza exhibited any analogy with those of disorders of malarious origin; so that, while admitting that benefit may arise from this medicine as a tonic, we are little disposed to trust to its specific powers. In other respects, there are useful suggestions as to treatment in the medical notes of this author. "The adynamic type throughout in the greater number of cases — the singular disproportion in all, between the seeming severity of the inflammatory symptoms, and their real lightness or nullity — the actual failure of bleeding in mitigating the violent and painful cough, which seems most expressly to require it, and the frequent success of remedies precisely the reverse of this; all show a specialty in the disease to which we must refer more or less directly in every question of practice." Hence he arrives at the general rule pointed out by many others: allowing, however, of occasional exceptions, which forbids bleeding as an ordinary practice in this disorder. He mentions exceptions to this principle, as arising in some habits prone to inflammation, in whom the first reaction of the disorder may pass into what is really this state, and require bloodletting for relief, and in other instances, where the congestion on the lungs is such in degree as to demand the same remedy; and these latter he considers the more frequent occurrences of the two. The report on the influenza, published in the third volume of the Transactions of the College of Physicians, speaks somewhat more favourably of the effect of bleeding in the epidemic of 1782. Thus we read: "Undoubtedly venesection was not always necessary or advisable, nor, on the contrary, was the omission of it always safe. Whenever symptoms of pleurisy or peripneumony appeared, the propriety of bloodletting could not admit of a doubt. But even in cases where no such evident symptoms of inflammation appeared, many learned and experienced physicians, if they were called at the beginning of the disease to a person strong and plethoric, and labouring under great heat and inquietude, ordered bleeding without hesitation, notwithstanding the common symptoms of languor; and under such circumstances they several times observed that the languor, oppression, and feverish anxiety were abated by the loss of a few ounces of blood; that both the head and breast were relieved; and that the disease proceeded to its termination with fewer difficulties both to the patient and to themselves." We insert this passage because we think the experience detailed in it may fitly serve as a guide in future visitations of the same sort; and assist in weaning medical men from the too great dread of depletion, and too great predilection for stimulants and tonics, which, as seen in the results obtained from them, in the recent scourge of 1847, have yet to make good their claim to the confidence which has been reposed in them.

A writer in the British and Foreign Medical Review for January, 1839, in noticing Mr. Streeten's Report on the Influenza of 1837, declares the almost unanimous statement to be, that venesection was not employed except in acute inflammation of the pulmonary organs. In these cases, he adds: "Our own experience is in favour of bleeding: the blood which was drawn presented the usual buffy coat. Of local bloodletting it is said, that it was more recommended than general, though rarely to any extent. Various counter-irritants were well spoken of. The exhibition of tonics and stimulants was a point of practice on which some diversity of opinion existed. Much mischief, says the reviewer, appears to have arisen from their indiscriminate use in an early stage of the disease, in accordance with the recommendations of the public press." The writers on the epidemic of 1782 tells us, that though some of their correspondents had given mild cordials and a generous diet, and justified their plan of treatment by its success, yet that in London cordials were seldom thought necessary or expedient. We deprecate running into extremes, and have endeavoured to show that if there be peril in undue bloodletting, there is little inducement to trust to tonics and stimulants. A middle course should be that generally followed, and we agree with the reviewer already quoted, when he says: "According to our own experience the simple saline medicine, or liquor ammoniæ acet. diluted with water, with a few drops of antimonial wine, were as generally beneficial as anything." The conclusions of some German writers with respect to the influenza generally, as stated in the same article, is the following.

"Under the use of diaphoretics and a regulated diet, the disease was generally mild in its course, and sometimes terminated critically, without the development of the second stage. Emetics were very useful when employed early. Antiphlogistics and narcotics relieved the pains and cough. Clysters were preferable to purgatives given in the ordinary way. Purgatives and bleedings are almost universally admitted to have been injurious, although cases sometimes occurred which required their employment. The early use of stimulants was often found very prejudicial."

All that we have said and quoted amounts only to this, that cases commonly classed together under the general designation of influenza, have great, and, in a practical point of view, most important individual differences; not only during different seasons and epidemics, but even during the same. We have seen not a few examples where the general debility was so great, and so disproportionate to the pulmonary malady, both in degree and in the danger attaching to it, that life could only be saved by administering tonics — as quinine — in considerable and oft repeated doses. We have believed such cases to be those in which the action of the poison fell upon the mucous membranes, both pulmonary and intestinal, simultaneously; the action upon the former involving less serious consequences than were wont to arise in pulmonary inflammation generally; but that upon the latter being of a most depressing character. Again, in other cases where the action fell on the substance of the lung, giving rise to pneumonia, with its characteristic sputa, the local mischief has demanded a careful antiphlogistic treatment; while a less amount of constitutional depression has contributed to render such treatment that which alone is safe and trustworthy. In fact, in this, as in numerous other instances, identity of name is far from justifying a close uniformity of management.

CATARRHUS VESICÆ, AUT CYSTIRRHŒA.

This affection appears to be connected with an inflammatory action of the mucous membrane which lines the bladder, giving rise to an inordinate secretion and discharge of the mucous fluid which that membrane naturally secretes.

The complaint is attended with an urgent and frequent desire to pass urine, spasm of the urethra and bladder, and the discharge of a more or less adhesive mucus. A slow fever usually accompanies this affection; there is thirst, pain in the back and loins, with general debility and want of rest. In the incipient stage of the disease, the urine, when voided, appears of a whitish colour, and is more or less opaque and turbid. On standing, however, for some time, it becomes more transparent, for the mucus is deposited at the bottom of the chamber-pot. As the disease proceeds, the quantity of mucus secreted is sometimes very considerable; and, from being at first rather opaque, now assumes a more purulent character, and becomes of a yellow or green colour, or is sometimes streaked with blood. In advanced stages, the disease is complicated with ulceration of the bladder; and the prostate gland becomes more or less implicated. The affection is usually of a chronic character; and when it occurs in old people, it frequently terminates in the destruction of life. In every instance, its complete cure may be considered as very difficult, and those who are subject to it have frequent relapses.

Cystirrhœa, or catarrhus vesicæ, says Dr. Prout, "is the term by which chronic inflammation of the mucous membrane lining the bladder is usually distinguished; and it usually, but not always, precedes the more acute form of inflammation, which is comparatively rare. It is much more frequently an induced than an original disease." "As it is in the majority of cases," writes Sir B. Brodie, "not a primary, but a secondary, affection, the symptoms of it are generally blended with those of another disease, — as of stone in the bladder in one case; of stricture of the urethra, or enlargement of the prostate, in another case."

In slight cases, and at the commencement of the affection, the urine itself is acid: the mucus excreted with it is neutral or alkaline. In this stage, acidity predominates in the mixed mass of fluid; and the mucus is more different in character than at a later period, or in a severer form. But if the disease be aggravated with the increase of mucus secreted, there is an increase of alkaline principle, which is recognized by the less acid, or even alkaline re-action, imparted to the urine; and by the more viscid condition observed in some or all of the mucus contained in it; and the urine ultimately assumes a brownish hue, the tint being communicated by the colouring matter of the blood, and a most offensive ammoniacal odour. It is remarked by Dr. Prout, however, that whatever may have been the nature of the preceding symptoms, or the properties of the urine, it almost always becomes acid before death; a phenomenon of which he offers no explanation, and for which it seems difficult to assign one.

The appearance which the diseased parts exhibit on dissection is thus described by Sir B. Brodie: —

"The mucous membrane is of a dark red colour, in consequence of its numerous vessels ramifying on its surface injected with their own blood. As the disease proceeds, the discolouration becomes greater, until, at last, the mucous membrane appears almost black from the turgid state of the vessels: at the same time that it is somewhat thickened and pulpy to the touch. The inflammation extends up the membrane of the ureters; which, in their turn, assume much the same appearance with the bladder itself. The pelvis of each kidney, and the processes of the pelvis or infundibula, become inflamed also: and these, as well as the ureters, are generally dilated, so as to be more capacious than natural. In the advanced stage of the disease, the inflammation is found to have extended to the glandular stricture of the kidneys; and these organs become not only more vascular than natural, but enlarged in size, and of a soft consistence, even approaching in appearance to that of a medullary tumour. Collections of muco-purulent fluid, tinged brown with grumous blood, and offensive to the smell, are sometimes found in the dilated infundibula: at other times there are distinct abscesses in the glandular structure. In cases where the disease is still farther advanced, before the patient dies we find that the inflammation has extended to the muscular tunic of the bladder, and to the loose cellular membrane by which the bladder is surrounded. Then coagulated albumen is deposited in the cellular texture; not unfrequently small putrid abscesses are formed in it; and sometimes it is found in a state of slough, or approaching to it. Occasionally, but rarely, ulceration takes place on the inner surface of the bladder, and sometimes to a very great extent."

The principal symptoms attending the gradual development of this state of things have been already detailed. The extension of the inflammation to the glandular structure of the kidneys, we are told by the author just quoted, is indicated by a still more formidable train of symptoms than previously existed. The patient has shiverings, is troubled with sickness and vomiting, with cold extremities and great prostration of strength: his pulse becomes irregular and intermitting; his tongue brown; he sinks and dies.

In the treatment of catarrhus vesicæ, and other affections of the bladder and prostate gland, supposed to be connected with a chronic inflammatory action, especially in their early stages, cupping on the loins, and the application of leeches to the perinæum, will be found serviceable; but in more advanced stages, these remedies can seldom be requisite, and may be hurtful. In this stage, gentle astringents, combined with sedatives, are sometimes very beneficial, and the best appear to be the uva ursi, and the leaves of the diosma crenata (Buchu plant). The former of these may be taken either in the form of decoction infusion, or extract, combined with hyoscyamus, and the latter in the form of decoction, consisting of half an ounce of the leaves to one pint of water, gently boiled down. For allaying morbid irritation of the bladder, accompanied with a muco-purulent secretion, I have found this remedy to be highly beneficial. Another which has received high testimony in its favour, is the pareira brava: half an ounce of the root put into three pints of water is to simmer gently near the fire till one pint only remains, and of this decoction the patient is to drink from eight to twelve ounces daily: or instead of this he may take eight or ten grains of the extract thrice a day. Very small doses of turpentine — as two grains of Chian turpentine — twice a day are said also to be of service; and small quantities of cubeb pepper — as fifteen grains — every eight hours may also be tried; but these doses of cubebs are not to be exceeded.

The bowels are, at the same time, to be regulated by aperient medicines — such as the oleum ricini, avoiding acrid and saline remedies of this character; or some other of the mild laxatives mentioned in previous articles may be resorted to, when castor oil deranges the stomach or causes vomiting, as so often happens.

The use of injections is interdicted by the eminent surgeon from whom we have largely borrowed in the present article, while the symptoms are at their greatest height, and the mucus deposited from the urine is highly tinged with blood. When, however, the symptoms have somewhat abated, the injection of tepid water, or of decoction of poppies, through an elastic gum catheter by means of a small syringe, is in many instances productive of excellent effects. The liquid should remain in the bladder about half a minute, and not more than an ounce and a half or two ounces be injected at a time. Painful distension of the bladder by the fluid injected does harm instead of good. The operation may be repeated once or twice in twenty-four hours. When there is a further abatement of the symptoms, the mucus being generally free from all admixture of blood, a single minim of the concentrated, or ten minims of the diluted, nitric acid may be added to two ounces of the injection; and afterwards this proportion may be doubled. Immediately before this acidulated fluid is employed, it seems advisable to wash out the bladder with a little tepid water; then to inject the acid mixture, not allowing it to remain more than thirty seconds. At first, this operation should not be performed oftener than once in two days; afterwards it may be repeated once a day, but never more frequently than this. If blood appear in the urine drawn off, the injection should be deferred to the following day; and if it be followed by pain and other indications of increased inflammation, it must be omitted till these have again subsided. These acid injections, when employed with the precautions above insisted upon, are useful, not only where the chronic inflammation is the primary disease, but also where it occurs as a secondary affection, the result of calculus in the bladder, or of chronic enlargement of the prostate gland.

Sir B. Brodie says of opium, that it agrees remarkably well with patients who labour under chronic inflammation of the bladder, and may be administered by the mouth or in enema at bedtime, and extract of hyoscyamus, or of lettuce, or of poppies may be given besides if necessary. Dr. Prout is an advocate for the use of narcotics — as of henbane, conium, or lettuce, alone or variously combined; and, when these fail, of preparations of opium. Of these he considers Dover's powder one of the mildest, and then he ranges in succession the watery extract of opium, Battley's sedative solution, tincture of opium, and crude opium, according to the usual order of their powers. Of the salts of morphia he considers the meconate as the most congenial and mildest, and gives a decided preference to the hydrochlorate over the acetate. As a general rule the use of alkalies — as of liquor potassæ — is restricted to the stages of the disease during which the urine preserves an acid reaction; but we have in the article on Cystitis adduced some facts and reasonings which would encourage us to disregard this limitation to their employment, so far as to make trial of their virtues in an opposite state of things, at least where the disease is independent of the presence of stones. The mineral acids, on the other hand — as the nitric and hydrochloric—are wont to be recommended where the urine is strongly alkaline; yet it must be remarked, in reference to their use, that no quantities of them which we can give are sufficient by their chemical action alone to neutralize, or materially to diminish, the alkaline properties of the contents of the bladder. This, we believe, to be an admitted fact. So that with regard to both these classes of remedies there is great need to discard chemical prepossessions, and, in resorting to one or other, to be guided only by their actually observed effects. Rest and a horizontal posture are important auxiliaries of the other treatment in all diseases of the pelvic viscera. The patient suffering from that under discussion must lie down as much as possible; if his malady be of an aggravated character, he must be confined to bed or to a sofa, and even in milder cases, or during convalescence, it will be necessary for him frequently to resort to the latter. Moderate exercise will be proper; but the patient should carefully avoid riding on horseback, or in a rough carriage, as also fatigue of any sort. In damp weather, and during winter, he should protect himself from the influence of the cold by warm and sufficient clothing.

The diet in this disease should be light and easy of digestion, as well as free from all stimulating condiments, — such as spices. In some cases and stages of the complaint, however, the depressed condition of the patient may demand nutritious diet, and even stimulating cordials.

Where the inflammation of the bladder, as so often happens, is a secondary complaint, more or less of the treatment just described may be desirable or necessary as preparatory to an operation for stone, or to the means pursued for the cure of stricture or the relief of the diseased prostate; but it will of course be a vain labour to attempt the cure of the consecutive malady, unless the primary engage our attention also.

DYSENTERIA, OR DYSENTERY.

Dysentery is a disease in which there is an inflammation of the mucous membrane of the intestines, accompanied with frequent stools, severe griping pains, tenesmus, and some degree of fever; the stools, although frequent, being small in quantity, and without any natural fæces intermixed, but consisting principally of mucus, which is sometimes streaked with blood. When the natural fæces do appear, they are usually under the form of small, compact, hard substances, known by the name of scybala.

In the medical schools of Europe, it has been taught that dysentery is of a highly contagious nature; and it undoubtedly is so where the sick are over-crowded, and cleanliness and ventilation are not properly attended to; but it seems probable that the disease itself, under all ordinary circumstances of accommodation, is not of an infectious nature.

In reference to the infectious nature of dysentery, we find a difference of opinion still existing among recent authors. Thus, Dr. Copland makes it part of his definition of the asthenic forms of this disease that they "give rise to fetid exhalations and infection in confined places, and in predisposed persons." He does not, however, attribute this property to other varieties of the complaint. Dr. Robert Williams describes the disease under the title of dysenteria palustris, and assigns paludal exhalations, or malarial influences, as its general exciting cause; and adduces some facts tending to negative its propagation by infection.

Dr. Baly, in his Gulstonian lectures for the year 1847, after a careful comparison of the morbid appearances accompanying dysentery as occurring under his own observation at Millbank, as arising in Europe generally, and as prevailing in India and other tropical climates, has come to the conclusion that there is no essential difference in the disease as met with in these different situations. Hence his inferences with regard to its causes may be taken as generally applicable in whatever country it may originate, although his personal investigations have been confined to its mode of production in England. "The idea," he says, "that the autumnal dysentery, diarrhœa, and cholera of this country are due to unripe fruits and other acrid ingesta, if entertained, would be negatived by the fact that the same complaints prevail during autumn in prisons where those causes do not exist, and prevail there even to a greater extent than among the free population. The medical officers of the army in India, however, still reckon the influences I have mentioned among the causes of dysentery; and this seems the more extraordinary, when we consider the frequently extreme severity of the inflammation of the large intestine in India, and the acknowledged existence there of a general and more adequate cause for the disease, — namely, a noxious state of the atmosphere." Again, he writes, "from these facts, as well as from the consideration of the whole character of the disease, I infer that dysentery is always produced by a poison introduced into the system from without, and that in most instances this poison is generated by the decomposition of matters contained in the soil. Many other reputed exciting causes of dysentery, — such as intemperance or exposure to cold — may have a share in the production of the disease; not, however, by acting as the efficient cause, but merely by disturbing the general health, and thus rendering the body obnoxious to the influence of the atmospheric poison which it previously resisted." Our limited space does not permit of our giving even a summary of the arguments by which these conclusions are supported; yet a consideration of these, and of the seasons and circumstances which are found to favour the production of dysentery, has convinced us of the adequacy of endemic causes for its development. We think that when the disease occurs epidemically, its origin is to be referred to local atmospheric, probably to malarious, influences. Yet, that particular acrid substances — as arsenic, gamboge, and concentrated solutions of nitre — are capable of producing symptoms very similar there can be no doubt, so that we must admit irritating agents among the occasional causes of intestinal disturbance akin, if not identical, with that of dysentery. We are not prepared absolutely to deny the infectious nature of the malady; yet our opinion leans decidedly to the negative in this matter.

Some of the predisposing causes have been alluded to above, and to these belong all debilitating influences, whether acting through the mind or directly upon the body; and among the latter, insufficient or improper food, inadequate clothing, intemperance and debauchery, deserve a prominent place.

Dysentery frequently occurs about the same time with autumnal intermittent and remittent fevers; and with these it is often complicated. It is likewise frequently combined with typhus, whereby the disease is rendered more highly contagious and malignant.

Dysentery is much more prevalent in warm climates than in cold ones; and in the months of August, September, and October, which is the rainy season of the year in the West Indies, it is apt to break out, and to become very general among the negroes on the different plantations in the colonies. It likewise prevails much in the unhealthy parts of the East Indies, and in our factories on the coast of Africa, both during the wet season and some time after it.

The dysentery of tropical climates is usually found connected, in some way or other, with derangement of the liver; but whether the one is a cause or a consequence of the other, observation has not accurately determined; for sometimes hepatitis precedes the rise of Indian dysentery; at other times it follows in succession;

and in some instances there are evident symptoms of both diseases existing from the commencement to the termination of the case. Hepatic abscess, when it occurs, is supposed to be often a result of the absorption of pus from dysenteric ulcers.

Dysentery may readily be distinguished from diarrhœa by the absence of fever and tenesmus in the latter: the appearance of the stools and the other symptoms will further assist us. The diagnosis may be easily made by these means in extreme cases; yet it seems allowed that the two disorders approximate to one another, so that in some instances it is difficult to decide to which of the two the particular malady is to be referred. Where the structures at the termination of the small intestines are implicated in the inflammation the stools often have a loose and feculent character in which the mucous secretions are not readily recognised, and if the lower extremity of the rectum be little affected, the tenesmus may be inconsiderable; while in dysentery the pulse is not always accelerated, nor the skin always hot. In some cases we shall be assisted by considering the character of the prevailing epidemic more than by the features of the individual example presented to us.

An attack of dysentery is sometimes preceded by loss of appetite, costiveness, flatulency, sickness at the stomach, and a slight vomiting; and comes on with chills, succeeded by heat in the skin, and frequency of the pulse, the mouth and fauces are dry, and the tongue is covered with fur, or it is red and polished. These symptoms are in general the forerunners of the griping and increased propensity to stool which afterwards occur; but it sometimes happens that the local affection is perceived first.

When the inflammation begins to occupy the lower part of the intestinal tube, the stools become more frequent and less abundant; and in passing through the inflamed parts they occasion great pain, so that every evacuation is preceded by a severe griping, as also by a rumbling noise, and there is unusual flatulence in the bowels.

The motions vary both in colour and consistence, being sometimes composed of frothy mucus streaked with blood, and at other times of an acrid watery humour, like the washings of meat, having a very fetid smell. Sometimes pure blood is voided; now and then lumps of coagulated mucus, resembling bits of cheese, are to be observed in the evacuations; and in some instances a quantity of purulent matter is passed in an advanced stage; sometimes, too, portions of dead mucous membrane are seen.

Sometimes what is voided consists merely of mucous matter, without any appearance of blood, exhibiting that disease which is known by the name of Dysenteria Alba, or Morbus Mucosus.

While the stools consist of these various matters, and are voided frequently, it is seldom that we can perceive any natural fæces among them; and when we do, they appear in small hard balls, called scybala, which being passed, the patient is sure to experience some temporary relief from the griping and tenesmus.

It frequently happens, from the violent efforts which are made to discharge the irritating matters, that a portion of the gut is forced beyond the verge of the anus, which in the progress of the disease proves a troublesome and distressing symptom; as does likewise the tenesmus, there being a constant inclination to go to stool, without the ability of voiding any thing, except perhaps a little vitiated mucus, or a small quantity of blood.

More or less of pyrexia usually attends the whole course of the disease, where it is to terminate fatally, and is either of an inflammatory or putrid tendency. In other cases the febrile state wholly disappears after a time, while the proper dysenteric symptoms probably will be of long continuance.

When the symptoms run high, and are accompanied with violent irritation of the whole intestinal tube, great prostration of strength, strangury, and hiccup, or with a putrid tendency, and fetid and involuntary discharges, the disease often terminates fatally in the course of a few days; but when they are more moderate, it is frequently protracted to a considerable length of time, and induces great emaciation and debility, but goes off at last by a gentle perspiration diffused over the whole body; the fever, thirst, and griping, then ceasing, and the stools becoming of a natural colour and consistence. When the disease is of long standing, and has become habitual, it seldom admits of an easy cure; and when it attacks a person in an advanced stage of scurvy or pulmonary consumption, or whose constitution has been much impaired by any other disorder, it is sure to prove fatal. It sometimes appears at the same time with autumnal intermittent and remittent fevers, as has before been observed, and is then more complicated and difficult to remove.

A great degree of tenesmus, severe griping pains, frequent inclination to go to stool and but little voided, much depression of strength, great emaciation, fetor of the evacuations, a tense abdomen, violent pyrexia, cold clammy sweats, coldness of the extremities, aphthæ, hiccup, petechiæ, and a weak irregular pulse, are to be regarded as very unfavourable symptoms; whereas a gentle and universal diaphoresis, moderate pyrexia, the evacuations becoming less frequent and of a more natural consistence, and a gradual diminution of the griping and tenesmus, are favourable appearances. The disease is very liable to a relapse from any exposure to cold, wet, or fatigue, and now and then it assumes a chronic form. Its duration is subject to great variety. The acute dysentery of warm climates occasionally proves fatal in a few days.

Upon opening the bodies of those who die of dysentery, the internal coat of the intestines (but more particularly of the colon and rectum) appears to be affected with inflammation and its consequences, such as ulceration, erosions, contractions, and gangrene; — and occasionally these appearances have extended to the small intestines. The peritonæum, in some instances, has likewise an inflammatory appearance.

Sir J. Macgrigor says of the dysentery which he observed in the Peninsula, and which he considered complicated with other diseases, that in it the viscus most frequently affected was the spleen; next to that the liver, which was diseased in nearly an equal proportion of cases with the spleen. He adds that the mesenteric glands were not unfrequently found affected, and sometimes the pancreas was one mass of disease.

Hepatic abscess, or the deposit of pus in the liver, is frequently observed in the dysentery of India.

The pathology of dysentery has been carefully studied by Dr. Baly, and the morbid appearances have been detailed in the lectures already referred to, delivered during the year 1847, at the College of Physicians. This author traces the inflammatory process as commencing in the solitary glands, especially in those of the rectum and sigmoid flexure of the colon; hence these become swollen, and form rounded prominences on the surface of the mucous membrane, varying in size from a millet seed to a full sized shot. In color these prominences are of a uniform pale red, or have a ring of bright redness at their bases, or exhibit marks of increased vascularity only at their summits. When the disease is somewhat more severe, these swollen solitary glands are surrounded by deeper and more extensive redness; and evident disorganization of the summits of many of them is observed, while a roughening of the mucous membrane is found around them. It is inferred from these appearances, discovered in patients cut off by other acute diseases while suffering under a mild form of dysentery, that the ulcers commonly met with in other stages and degrees of the disease are produced in their commencement by a process of mortification and sloughing, and not by ulceration.

In severer cases small round ulcers or excavations, resulting probably from the destruction of the solitary glands, are met with, coalescing into larger ulcers; while in other instances the solitary glands appeared not to suffer more, nor to perish sooner, than the surrounding mucous membrane; but larger or smaller tracts fall into a state of gangrene, and the sloughs when discharged leave ulcerous excavations, which are generally seated on the more prominent folds of the inner surface. A large continuous surface may, however, be thus affected, since, in one instance, an uninterrupted slough is said to have extended from the middle of the descending colon to the termination of the rectum.

The rectum and the lower half of the colon appear to be the proper seats of the inflammation: the amount of tenesmus depends upon its severity in the latter part. The cæcum not unfrequently, and at times the lower part of the small intestines, are also affected, either primarily or by continuous extension; and this circumstance gives rise to the passage of liquid feculent matters. The healing of the ulcers takes place from the circumference towards the centre, and there is subsequent contraction of the cicatrices, and some puckering at their borders; the epithelium is restored, but not the tubular follicles.

Two different stages seem evidently to exist in the course of this disease; wherefore, to treat it properly, due attention should be paid to that which is present at the time when advice is applied for. An important point to be attended to is, not to neglect it at its commencement.

In its first stage, if the patient is young and plethoric, the pain severe and constant, and the disease is accompanied by inflammation of the liver, as is sometimes the case in warm climates, early blood-letting may be requisite. It will also be proper, if the pulse be firm, where, besides the tormina and tenesmus, there is a considerable discharge of blood with the stools, which consist of little else than that and mucus; but otherwise venesection will not be necessary, particularly as the fever which accompanies dysentery is very apt, in the course of the disease, to assume a typhoid type.

As in this disease there is, however, always an inflammatory condition of the bowels, leeches may be applied with benefit to the seat of the sigmoid flexure of the colon, as well as over the upper extremity of the rectum, with a chance of considerable benefit.

From twelve to twenty leeches should be applied to the abdomen, and repeated daily, till either a remission of the symptoms be obtained, or the exhaustion of the patient forbids their continuance. The amount and the seat of the pain, produced by firm pressure, will assist in determining both the necessity and place for their application.

In most cases, we may begin the cure by giving a gentle emetic in the evening, and the next morning we may administer castor oil or some saline purgative, which should be repeated every second or third day, in order to procure an evacuation of natural fæces, which seldom pass off in any quantity, unless by artificial means.

As a complete cure in dysentery can only be effected by a full and free discharge from the intestines, and this kept up throughout the whole period of the disease, a frequent repetition of such medicines as will effectually promote the end in view must be assiduously attended to. Should those which are prescribed below * not

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* ℞ Sodæ Sulphat. ʒvj.
Mannæ Optim. ℥ss.
Aq. Fervent. f. ℥jss.

Tinct. Sennæ C. ʒij. M.

Ft. haustus.

Vel,

℞ Ol. Ricini, f. ℥j. pro dos.

* Take Sulphate of Soda, six drachms.
Manna, half an ounce.
Warm Water, one ounce and a half.
Compound Tincture of Senna, two drachms.
Mix them for a purgative draught.

Or,

Take Castor Oil, one ounce for a dose.

procure copious stools, we must then employ stronger purgatives.* Some practitioners are in the habit of combining emetic and purgative medicines — such as some of the mild neutral salts — with tartarized antimony †, and often with a very good effect. A draught combining both soothing and laxative properties, and well calculated to give relief in the earlier stage of British dysentery at least, is subjoined.‡

Dr. James Irving, Assistant Surgeon of the Bengal army, in a paper[a] dated August, 1848, has given the details of several cases of dysentery treated by enemata of warm water, which he has prefaced with remarks so concise, interesting, and practical, that they are well suited to our purpose in introducing this method of treatment to our readers. The practice is stated to have been recommended by Dr. O'Beirne, of Dublin, in the year 1822, in his New Views of Defæcation, and recently revived in India by Assistant Surgeon Hare, in his Hints for an improved Treatment of Remittent Fever and Dysentery.

Of the rationale of this practice Dr. Irving writes, "It is well known that in dysentery fæcal accumulations are apt to occur at the sigmoid flexure of the colon, and at the cæcum, and that the

[a] Edinburgh Med. and Surg. Journ. vol. lxxi. p. 99.

Vel,	*Or,*
℞ Magnes. Sulph. ℥j. Mannæ Optim. ℥ss. Aq. Fervent. —— Menth. Pip. āā. f. ℥ijss. Tinct. Rhei, f. ʒij. M. Cujus sit dosis cochlearia quatuor pro re natâ.	Take Sulphate of Magnesia, one ounce. Manna, half an ounce. Warm Water. Peppermint Water, of each two ounces and a half. Tincture of Rhubarb, two drachms. Of this solution four large spoonsful may be taken occasionally.
* ℞ Hydrargyr. Chlorid. gr. iij. Pulv. Jalapæ, ℈j. Syr. Rhamni, q. s. M. Ft. massa, in pilulas v. pro dos. dividenda.	* Take Chloride of Mercury, three grains. Powdered Jalap, one scruple. Syrup of Buckthorn, a sufficiency. Form the mass into five pills, to be taken for a dose.
† ℞ Infus. Sennæ Compos. f. ℥v. Potassæ Tartrat. ℥j. Antimon. Tartar. gr. ij. Solv. Hujus misturæ sumantur cochl. iv. quolibet trihorio, donec venter ritè solutus erit.	† Take Compound Infusion of Senna, five ounces. Tartrate of Potass, one ounce. Tartarized Antimony, two grains. Dissolve them, and of this mixture four large spoonfuls may be taken every three hours, until the bowels are sufficiently moved.
‡ ℞ Olei Ricini, ʒss. ad ʒj. Liquor. Potassæ, ♏x. ad ♏xx. Mistur. Acaciæ. Syrup. Aurantii, ā. ʒj. Aquæ Cinnamomi, ʒix. Tincturæ Opii, ♏v. ad ♏x. Fiat emulsio; sextâ quâque horâ vel sæpius sumenda.	‡ Take Castor Oil, half a drachm to a drachm. Potash Water, ten to twenty minims. Mixture of Gum Arabic. Syrup of Orange Peel, of each a drachm. Cinnamon Water, nine drachms. Tincture of Opium, five to ten minims. Make an emulsion to be taken every six hours, or more frequently.

lodgement of these masses tends very evidently to irritate and inflame the mucous surface on which they lodge. Hence in the treatment of the disease purgatives have been pretty generally recommended by authors and practitioners. Annesley used to prescribe twenty grains of calomel at night, and a black dose in the morning; Bampfield, another author of very varied experience in the treatment of dysentery, gave eight or twelve grains of calomel twice or thrice a day, till salivation and purgation were produced; and, to ensure a full purgative action, used also to give thirty grains of jalap, or an ounce of salts. Purgatives are also recommended as an important part of the treatment by Curtis, Wade, Ballingall, Lempriere, and Twining, all of whom saw much of the disease within the tropics; and there are few writers who do not advise the occasional use of laxatives as a part of the cure.

In order to administer the enema as recommended by O'Beirne and Hare, the patient lies on his back, and the elastic tube of Reade's or Weiss's stomach pump (with, however, a large hole at the extremity of the tube instead of those at the sides) is passed through the anus, and carried gently onwards for about nine inches, when the end will reach the flexure; warm water, or milk and water of the temperature of 90°, and in quantities varying from three to six pints, is then pumped into the bowels, which may be observed to become gradually distended. On withdrawing the tube, if the patient can bear it, he should be laid on the left side, or have his belly gently rubbed or pressed. On his going to stool the injection is returned, and generally procures a free feculent evacuation. By means of the pumping the water is intimately mingled with any accumulations; and the tube, by being moved from side to side, or gently up and down, assists more effectually to break up hardened masses. By the first injection some fæcal matter, at least, will be softened and removed, and the injection can be applied again and again.

This plan, we are told, is now extensively adopted in Bengal, and is available as well in the chronic as in the acute form of the malady. In chronic cases, when ulcers exist, and astringent lotions are thought desirable, Mr. Hare first washes out the intestines, and then throws up a medicated enema, the best of which he has found to consist of fifteen grains of nitrate of silver dissolved in two and a half, or three, pints of water, a strong decoction of bark, or a mixture of catechu and chalk. Dr. Irving speaks from his personal experience of the benefits arising from the daily use of the injection, to which a few (as forty) drops of laudanum, and a few (as six or eight) grains of acetate of lead had been added. A patient (he states), who before has had frequent small stools accompanied by pain and tenesmus, after the enema has a copious feculent motion without tenesmus, and from this time the evacuations become less frequent, contain less blood, and, by the daily repetition of the injection, with scarcely any other remedy, a cure is produced.

If the inflamed and swollen condition of the anus and rectum interpose no serious difficulty in the way of the introduction of the long injection tube, and none such is alluded to either by Mr. Hare or Dr. Irving; and if, as appears probable, the substitution of large tepid injections in the place of purgatives can be successfully made, so as to insure those essential objects, the dislodgement of fæces, and the dilution and washing out of vitiated secretions, an advantage will be gained in the treatment of dysentery by the adoption of the plan here proposed, the value of which it is scarcely possible to estimate too highly. And the general value of this important gain may be enhanced by the modification suggested above, of medicated enemata, which should reach not the rectum only, but well nigh the whole surface of the diseased colon.

With the view of determining the circulation to the surface of the body, small doses of some diaphoretic — such as the pulv. ipecac. compos. — may be taken every four or six hours, after proper evacuations, so as to produce and keep up a gentle perspiration, without exciting much nausea. As a diaphoretic in dysentery, where an inflammatory disposition prevails, after bleeding and opening the bowels freely with castor oil or other purgatives, we probably know of no better remedy than antimonial powder, or ipecacuan combined with a little calomel and opium. A warm bath, assisted by diluents and warm covering, may prove good auxiliaries. By these means we may be able sometimes to cut the disease abruptly short, and arrest its progress.

A novel method of using emetic medicines in dysentery has been recommended by a late writer *; and we are assured by him that he has found the practice highly successful. This is in the form of a clyster; and that which he has experienced to answer best has been about three drachms of ipecacuanha root, bruised, and boiled in a quart of water down to a pint, which he repeats twice or thrice in twenty-four hours. Others have given a drachm of the powdered root with a drachm of laudanum, by the mouth, apparently with great benefit. At a somewhat later period of the disease, or at any time when it has assumed an asthenic form, more stimulating clysters have been employed with advantage for the relief of the tenesmus. Thus Dr. Baly says that when the inflammation has been very severe in the lower part of the large intestine, when the pain and tenesmus have been great, and the discharge of bloody fluid and mucus very frequent, and when simple opiate enemata have failed to alleviate these symptoms, the injection of a few ounces of black wash with a drachm of laudanum has often given great relief, and has appeared to check the inflammatory process. Dr. Wilmott in asthenic dysentery gave an injection of one drachm of creosote in twelve ounces of starch each night,—in one case from the eleventh to the eighteenth day of the disease,—and observed great improvement as regarded the bloody discharges and the general symptoms. Dr.

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* See Observations on the Nature and Cure of the Diseases of the East and West Indies, by Thomas Clarke, Surgeon.

Pemberton recommends an injection of forty minims of copaiba in four ounces of starch. In chronic dysentery we have administered the enema Terebinthinæ with great relief of the tenesmus, and shall not hesitate to employ it earlier where free leeching had been previously employed, or the disease had assumed an asthenic form.

If dysentery is accompanied with violent retchings or a severe vomiting on its attack, so as to threaten the patient with cholera morbus, neither emetics, purgatives, nor diaphoretics will be advisable at first. In such cases, the stomach must be evacuated of its contents by the gentle stimulus of large draughts of camomile-tea. The same, or weak broth, may be thrown up the intestines in the form of a clyster until these are cleansed; after which an opiate should immediately be given. If the opium is rejected, a double quantity of it is then to be administered in a clyster.

Should the vomiting continue very obstinate notwithstanding these means, the safety of the patient will then depend on bathing the region of the stomach well with tincture of opium and camphorated spirits, on repeating the clysters frequently with a proper quantity of opium in each, and on adopting the other steps advised under the head of Cholera Morbus. A blister applied over the stomach may sometimes be useful.

In cases such as these, if such are to be met with, we should prefer trying to quiet the stomach either by five grains of calomel given with sugar, and followed at an interval of three or four hours by a draught of magnesia with a scruple of epsom salts; repeating the draught every four hours till it was retained, and then less frequently; or instead of this, two grains of calomel with half a grain of opium, made into a small pill with extract of hop, or gentian, might be tried every four hours, either with or without the draught. We have great faith, founded on experience, in the soothing effects of the alkaline earths, or inflamed or irritated mucous surfaces; and magnesia, from its less constipating effects, is at the commencement of the disease to be preferred to chalk. In some severe cases Dr. Baly conceives it advisable, if not necessary, to push the calomel and opium in the form just given to a moderate effect upon the mouth. He does not employ magnesia in the way here suggested; and we confess our surprise at finding a mercurial treatment advocated by one who so clearly points out the gangrenous tendency of the disease: nevertheless, we are content to give greater weight to experience than to any analogy or theory. His use of calomel and opium is irrespective of the presence of vomiting, and in severe cases he carries it to free salivation.

In dysentery, when the abdomen is hard, tense, and painful to the touch, and the gripings are frequent and severe, the application of flannels wrung out in a warm decoction of camomile-flowers and poppy-heads, with a small addition of camphorated spirits to the part, may afford considerable relief; but should fomentations not procure the desired effect, a blister ought to be put on. Most cases of dysentery, and particularly during the acute stages of the disease, may be relieved by immersing the patient in a warm bath of a moderate temperature, and keeping him in it for some time. Perhaps rubbing the abdomen with some warm and stimulating embrocation on his being taken out of the bath might increase its effect. Yet often this would do more harm than good.

To defend the inner coat of the intestines from the acrimony of its contents, and to counteract the vain attempts at evacuation, it will be necessary to give something to be discharged. Here, then, we should not only administer mucilaginous substances — such as a solution of gum acacia in milk, preparations of barley, rice, arrowroot, &c.* — by the mouth, but we should likewise inject a clyster of a similar nature† three or four times in the course of the day. All vain attempts to go to stool, as also all violent strainings in evacuating the contents of the bowels, ought carefully to be avoided by the patient throughout the disease.

If the fundament becomes inflamed or excoriated, the parts should be anointed, after each evacuation, with a little soft pomatum or prepared lard, joined with opium rubbed down fine. An ointment made with one drachm of prepared chalk, triturated with an ounce of prepared lard, and a drachm of rose water, so as to render it soft, will be found very soothing. Fuller's earth in fine powder sprinkled over the part, though an old woman's remedy, is one not to be despised.

In the cure of Indian dysentery, mercury is much relied on; but it is to be employed in an early stage of the disease. The plan recommended is, to give calomel in a considerable dose night and morning without interruption, accompanied by a mercurial friction of the abdomen until the mouth becomes sore. If diarrhœa ensues, this symptom is not to be interfered with, but rather encouraged by an occasional purgative of the sulphate of soda or rhubarb. I am much inclined to doubt, however, whether mercury so employed as to produce salivation will be found useful, or even innocent, in the cure of real dysentery. Indeed, I should think it could not fail in many instances to prove hurtful, and particularly in the doses which are mentioned. When given, it probably might be found better to combine it with ipecacuanha — as, for instance, half a grain of calomel with one of ipecacuanha,—every two hours until the gums are affected, or combined with antimonial powder and opium.

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* ℞ Gum. Acaciæ, ℥ij. Solve in
Decoct. Hordei, Oij. et adde
Syrup. Cort. Aurant. f. ℥ij.
Bibat æger pro potu ordinario.

Vel,

℞ Misturæ Corn. Usti, Oj. in dic.

† ℞ Decoct. Amyli, f. ℥v.
Ol. Olivæ, f. ℥ss. M.
Ft. enema; adde, pro re natâ,
Tinct. Opii, f. ʒss.—ʒj. M.

Ft. enema.

* Take Gum Acacia, two ounces. Dissolve it in
Barley Water, two pints, and add
Syrup of Orange Peel, two ounces.
The patient may take this for ordinary drink.

Or,

Take Mixture of Burnt Hartshorn, one pint daily.

† Take Decoction of Starch, five ounces.
Olive Oil, half an ounce.
Add occasionally
Tincture of Opium, half a drachm to one drachm.
Mix them for a clyster.

In the inflammatory variety of dysentery, the necessity of previous bleeding and purging to the employment of mercury, with the view of producing ptyalism, must be obvious to every practitioner.

It has been pretty generally supposed that many constitutions of the residents in India are ruined by the use of calomel; and a distinguished writer* on the disease of the East Indies has been induced to consider this occurrence as the consequence of continuing its use in *small* doses after the necessity for using it has ceased. He says that small doses of this medicine — such as from two to four or six grains — will purge and keep up a considerable degree of irritation in the stomach and bowels when twenty grains will not, but, on the contrary, will allay the irritation of both when it results from inflammation of their mucous services. In his opinion, calomel in large doses acts as a sedative.

Where there exists disease of the liver, or morbid action of the biliary system in dysentery, mercury has certainly been found highly useful; and from its singular utility in this combination of disease, the practice has become in warm climates so general of treating it, in all its stages, by this remedy; a treatment, however, which must in many cases be improper. The connexion between dysentery and the deranged functions of the skin and liver has been illustrated by Dr. Johnson, who is an advocate for considerable doses of calomel combined with small portions of opium. We are also told by a modern writer† that a proper combination of these two medicines has a surprising effect in restoring the natural balance of the vascular system, and in promoting the free secretion of bile. He says, that when it fails in acting forcibly on the skin in dysentery, small doses of the pulvis antimonialis and camphor may perhaps be added with advantage, the warm bath being occasionally used at the same time to equalise the circulation.

The singularity in the appearance of the fæces (as seldom passing by the anus in the form of scybala, but whether by the action of medicine or otherwise, being generally loose and liquid) has not passed unobserved by Sir James Macgrigor, Mr. Bampfield‡, and others; and it has been conjectured that this peculiarity in tropical dysenteries arises from the intestinal secretions being considerably increased, and being more thin and acrid than in the climates of Europe, so that scybala are easily broken down and amalgamated with the more fluid matter, in their passage along the intestinal canal to the rectum.

In the secondary attacks of Indian dysentery, where the relaxed and weakened state of the bowels seemed to keep up the disease, the diluted nitric acid, in the quantity of about two drachms in the day, in barley-water, has proved a useful adjunct in the cure, and has been found to diffuse an agreeable sensation of warmth through the whole line of the alimentary canal. On leaving off the use of this medicine, an infusion of quassia, calumba, or cascarilla, may be administered till the stomach and bowels have recovered their vigour and proper tone.

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* See Mr. J. Annesley's Observations on the Effects of Calomel, and the prevalent Diseases of India.

† See Practical Illustrations of Typhus and other Febrile Diseases, by J. Armstrong, M.D.

‡ See his Practical Treatise on Tropical Dysentery.

In an advanced stage of the complaint, and when debility is present, Dr. Pemberton recommends a draught containing ten minims of balsam of copaiba mixed by means of yolk of egg with an ounce and a half of decoction of bark, and a drachm of the compound tincture of bark, to be given every six hours.

At the commencement of dysentery it would be improper to employ either opiates uncombined with diaphoretics, or astringents; but in the second stage, a use of these remedies will prove both proper and beneficial, care being taken to obviate costiveness, and evacuate the contents of the intestines from time to time, by administering a few grains of rhubarb, or some such gentle laxative.

In this stage of the disease, should the patient's rest be much disturbed at night from the frequency of the motions, we may direct an opiate* to be taken at bed-time.

In chronic and habitual fluxes, which are complaints frequent with those who have suffered much sickness in tropical climates, it is seldom, indeed, that relief can be obtained without the aid of opium, and it is often found necessary to add it to all the other medicines we administer. Opiates, especially those of the warmer kind, — such as the confectio opii, &c., — are as valuable in these cases as the bark of cinchona is in intermittents.

When the bowels have been effectually relieved, it often happens, after the disease has continued for some time, from the tender state of the rectum, that a severe and troublesome tenesmus remains. Under such circumstances, as a commodious substitute for anodyne clysters, we may direct the patient to insinuate into the anus a pill of about two grains of opium, previously somewhat softened betwixt the fingers. We may also cause warm fomentations to be applied to the parts, besmearing them afterwards with opium rubbed down very fine in spermaceti ointment. If these means fail, as they often

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* ℞ Aq. Cinnam. f. ʒvj.	* Take Cinnamon Water, six drachms.
Spirit. Pimentæ, f. ℥ss.	Spirit of Pimento, half an ounce.
Syrup. Zingib. f. ʒj.	Syrup of Ginger, one drachm.
Tinct. Opii, ♏xx. M.	Tincture of Opium, twenty minims.
Ft. haustus.	Mix them for a draught.
Vel,	*Or,*
℞ Opii, gr. j.—ij.	Take Opium, one grain to two grains.
Pulv. Antim. gr. ij.	Antimonial Powder, one grain.
Confec. Rosæ, q. s. M.	Confection of Hips, a sufficiency to
Ft pilula.	form a pill.

will, some one of the more stimulating enemata, before spoken of, will deserve a trial.

We are told that opium, combined with the nitric acid, agreeably to the prescription[*] here advised, has, on various trials, been found to have been attended with the best effects in the advanced stage of dysentery, when all other remedies have proved ineffectual, and even in cases where death seemed almost inevitable.[†]

The astringents best adapted for the cure of a dysentery are sulphate of copper[†], the different preparations of catechu, logwood, &c., which may be given as below[‡], the patient at the same time taking Port wine properly diluted with water for his ordinary drink. Lime-water, mixed with an equal proportion of milk, has been much recommended as a useful remedy in the latter stage of the disease. During my residence in the West Indies, I was in the habit of recommending a strong decoction of logwood with the barks of pomegranate fruit and the cashew cherry-tree, or anacardium, as an astringent drink, from which my patients seldom failed to experience a good effect.

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[*] ℞ Acid. Nitrici Dilut. f. ʒij.
Tinct. Opii, ♏xxx.
Aq. Puræ, f. ℥iij. M.
Capiat cochleare minimum ter quaterve die in quovis vehiculo.

[*] Take Diluted Nitric Acid, two drachms.
Tincture of Opium, thirty minims.
Pure Water, three ounces.
Mix them, and take about a tea-spoonful three or four times a-day.

[†] ℞ Pulv. Cupri Sulphat. gr. vj. ad gr. xij.
Pulv. Opii, gr. iij.
Farinæ Tritici.
Extract. Gentian. ā. ℈j.
Syrup. q. s.
Misce; fiant pil. xij. sumat; ter die.

[†] Take Powdered Sulphate of Copper, six to twelve grains.
Powdered Opium, three grains.
Wheat Flour.
Extract of Gentian, of each a scruple.
Syrup enough.
Mix well together; and make into twelve pills; and let one be taken thrice a day.

[‡] ℞ Extract. Hæmatoxyli, ʒj.
Mist. Cretæ, f. ℥iv.
Tinct. Catechu, f. ʒij.
Spirit. Myristicæ, f. ℥j. M.
Ft. Mistura, cujus sumat cochl. larg. ij. quartis horis.

Vel,

℞ Confect. Aromat. ʒj.
Aq. Cinnam. f. ℥v.
Spirit. Pimentæ, f. ℥j.
Tinct. Kino, f. ʒij. M.
Ft. mistura. Adde pro re natâ singul. dosi,
Tinct. Opii, ♏v.

Vel,

℞ Confect. Opii, gr. x.
Aq. Cinnam. f. ℥jss.
Tinct. Catechu, f. ʒj. M.
Ft. haustus, quartis horis sumendus.

[‡] Take Extract of Logwood, one drachm.
Chalk Mixture, four ounces.
Tincture of Catechu, two drach.
Spirit of Nutmeg, one ounce.
Of this mixture take two table-spoonfuls every four hours.

Or,

Take Aromatic Confection, one drachm.
Cinnamon Water, five ounces.
Spirit of Pimento, one ounce.
Tincture of Kino, two drachms.
This mixture may be taken as the former, adding occasionally to each dose
Tincture of Opium, five minims.

Or,

Take Opium Confection, ten grains.
Cinnamon Water, one ounce and a half.
Tincture of Catechu, one drachm.
Mix them, and take this draught every four hours.

In the advanced and chronic stage of the disease, as acidity at the stomach is apt to prevail, absorbents—such as the mistura cretæ, pulvis cretæ compositus, liquor calcis, &c.—combined with opiates, will be useful.—See Dyspepsia for formulæ of these medicines.

The impaired tone of the intestines is likewise to be restored by a use of tonics and bitters*, together with a light nutritive diet and moderate exercise.

When the fever accompanying this disease appears under an intermittent or remittent form, its treatment is to be regulated as directed under these heads, by a use of the bark of cinchona, &c.

In those instances where a sallow hue of the countenance, tenderness upon pressure over the region of the liver, and a clayey appearance in the fæces occasionally voided, manifest the presence of a diseased or obstructed state of the liver, we should resort to mercury, to such an extent as to keep up a gentle affection of the mouth until the symptoms are mitigated. We may give the diluted nitric acid at the same time.

In the first stage of dysentery, the use of ripe fruits will be proper; but in a more advanced period, where any morbid acidity seems to prevail in the stomach, they should not be recommended.

Every sort of food of difficult digestion ought carefully to be avoided throughout the whole course of the disorder; as also all kinds of fermented and spirituous liquors; the patient's strength being supported with preparations of barley, rice, sago, flour, panado, Indian arrow-root boiled in milk, occasionally varied for gelatinous broths. During the state of convalescence, Port wine or Sherry, or even a moderate quantity of brandy properly diluted with water, may be allowed. Of malt liquors genuine bitter beer, or sound porter may be tried.

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* ℞ Cort. Simarubæ contus.
—— Cascaril. āā. ℥ss. coque ex

Aq. Bullient. Oj. ad ℥viij. colat. adde

Spirit. Cinnam. f. ℥ij.
Tinct. Opii, ♏xxx. M.
Capiat cochl. iij. quartâ quâque horâ.

Vel,

℞ Infus. Cort. Cuspariæ, f. ℥vj.

Tinct. Calumbæ, f. ℥j.
—— Catechu, f. ʒij.
Acid. Nitric. Dilut. f. ʒj. M.
Ft. Mistura, cujus sit dosis cochlearia magna iij. ter in die.

Vel,

℞ Decoct. Cort. Cinchonæ, f. ℥jss.

Tinct. Calumb.
—— Cort. Aurant. āā f. ʒjss.

—— Kino, ♏xxv. M.
Ft. haustus, ter quaterve die sumendus.

Vel,

℞ Misturæ Ferri Comp. ℥vj.
Sumat quartam partem ter quaterve in dies.

* Take Simaruba Bark, bruised,
Cascarilla Bark, of each half an ounce.
Boil them in a pint of water until reduced to eight ounces, strain off the liquor, and add
Spirit of Cinnamon, two ounces.
Tincture of Opium, thirty minims.
Mix them, and let the dose be three table-spoonfuls every four hours.

Or,

Take Infusion of Angustura Bark, six ounces.
Tincture of Calumba, one ounce.
—— —— Catechu, two drachms.
Diluted Nitric Acid, one drachm.
Of this mixture, the dose may be three table-spoonfuls thrice a-day.

Or,

Take Decoction of Peruvian Bark, one ounce and a half.
Tincture of Calumba,
—— —— Orange Peel, of each one drachm and a half.
—— —— Kino, forty drops.
Mix them for a draught, to be taken three or four times a-day.

Or,

Take Compound Iron Mixture, six ounces, let a fourth part be taken three or four times a day.

Persons recovering from a dysentery should observe the greatest caution and regularity in their mode of living, and should be protected by wearing flannel next the skin, as the disease is very liable to recur from any fresh exposure to cold, wet, damp, or sudden atmospherical vicissitudes.

A waistcoat of flannel or fleecy hosiery next to the skin ought always to be worn, as likewise sliders of the same; and these should be laid aside with caution, and by slow degrees. The writer* of a small tract on dysentery lays much stress on swathing the abdomen with flannel bandages, as being the best mode of confining a certain degree of heat over that part of the body which is the seat of the disease; and this practice is reported by Sir James Macgrigor † to have been found very serviceable in many cases, both as affording an equal support, and keeping up a due degree of warmth on the surface of the abdomen.

Since dysentery often spreads in situations where many people are crowded together (as in camps, prisons, and on board of ships), every precaution should be adopted to prevent this evil. The sick ought immediately to be separated from those in health, or who labour under any other disorder; they should be lodged, if possible, in well-ventilated rooms or tents, and the strictest attention should be paid to cleanliness, the stools being removed as soon as voided, and quickly buried, and the linen both of the body and beds being changed frequently. In addition to these means, the chloride of lime or soda in solution, or the fumigations advised under the head of Typhus Gravior, may be resorted to. Whatever the circumstances of the case, all sources of atmospheric contamination, whether in camp, or ship, or prison, should be diligently sought out, and carefully removed; amongst which the bilge water in ships will deserve particular attention. Such sites for encampments should be avoided as are known to have been previously prolific in this disease, and after it has actually appeared to shift the ground, where this can be done, will be among the most effective of expedients both for prevention and cure. In all cases especial care should be taken to guard against the predisposing causes of the malady by such a dietary, such clothing, such exercises and amusements as may best maintain sound health both of mind and body.

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* See H. Dewar's Observations on Diarrhœa and Dysentery, as those Diseases appeared in the British Army during the Campaign in Egypt in 1801.

† See Medico-Chirurgical Observations, vol. vi. p. 433.

CLASS II.

NEUROSES, OR NERVOUS DISEASES.

This class of diseases is marked by preternatural affections of sense and motion without idiopathic or primary pyrexia.

ORDER I.

COMATA.

Diminution of voluntary motion, with sleep or a suspension of sense, is the character of this order of diseases.

APOPLEXIA, OR APOPLEXY.

This disease consists in a sudden abolition of all consciousness, while at the same time the heart and lungs continue their actions, the breathing being modified so as to be slow and deep, and almost always stertorous, or snoring. Stertorous breathing, accompanied by insensibility, may be considered diagnostic of apoplexy: it is only in the rarer examples of apoplexy without stertor that any doubt can exist as to the nature of the disease.

Paralysis and apoplexy are nearly related diseases: indeed, paralysis is regarded by many as a partial apoplexy, or apoplexy as a more extensive paralysis; and this view is in some measure correct; yet though these arise from similar causes, and often coexist or appear in succession, there are some essential distinctions to be noted between them. Thus apoplexy always includes in it the idea of abolished perception and intelligence; yet it may be, and often is, perfect or complete in the absence of all true paralysis. If there be no feeling in any part, it is because the brain has become incapable of receiving any impressions; if there be no voluntary motion, it is because there is no volition. In paralysis, on the contrary, we may have consciousness perfect, and all the senses entire; the power of willing remains, but certain muscles refuse to obey the will; the faculty of perception remains; but certain parts convey either modified sensations or none at all.

A loss of consciousness exists alike in apoplexy and in epilepsy; but in apoplexy there are seldom any convulsions, and if there be any, they affect only a part of the body, and are slight; in epilepsy they are almost always present in some part of the paroxysm, and are violent; and there are often in this last noises like the barking of a dog, and a foaming at the mouth, and gnashing of the teeth, that are absent in apoplexy; while there is seldom any stertor during the epileptic fit. Apoplexy is a disease of middle age and advanced life; epilepsy belongs principally to an earlier period, — as to childhood and puberty. Epilepsy is a chronic disease, consisting of frequently recurring paroxysms, so that the previous occurrence of fits creates a presumption in favour of their return; and makes it probable that the existing seizure may be of the same nature as those which have preceded.

It is on this account, therefore, always necessary to inquire into the history of the patient, and more especially to learn whether he have suffered in a like manner before. Cases, however, will at times occur of protracted insensibility coming on suddenly without convulsions, and without stertorous breathing, in which nothing but the event, and perhaps not even that, will determine whether they belong to the class of epilepsy or apoplexy. In some instances, indeed, the former may pass into the latter disease, and so prove fatal.

The state of stupor induced by opium has much resemblance to an attack of apoplexy; so as to require that the points of difference should be pointed out. Now in persons poisoned by large doses of opium the face is pale, calm, and perspiring, the pupil contracted, and the respiration tranquil and without stertor; besides which the patient can, in almost all cases, be aroused by violent agitation, and may be kept awake by being made to walk between two attendants; whereas in apoplexy the countenance is flushed and bloated, the features distorted, the pupil generally dilated, the respiration deep and labouring and stertorous, and the stupor such as defies all efforts to excite in the sufferer any recognition of the objects around him. Sometimes, too, the odour of laudanum may be perceived in the breath; and more frequently the smell of opium may be detected in any matters vomited spontaneously, or in consequence of emetics; but this guide is often wanting. In doubtful cases our judgment may be assisted by ascertaining whether, on the one hand, there have been any causes of depression, or any manifestation of despondency which might have prompted a suicidal attempt, for this is the only way in which poisoning by opium is wont to take place; or whether, on the other, there have been any previous attack or premonitory symptoms of apoplexy to confirm us in the belief that the malady before us is of that nature.

In general, apoplexy may be distinguished from intoxication by the patient not being roused by shouting in his ear, by applying volatile spirits to his nostrils, or by shaking or punching him; and by his breath being untainted by the smell of wine or spirituous liquors. The extreme of insensibility from intoxication is sometimes, however, with difficulty to be distinguished from apoplexy; but its duration seldom exceeds ten or twelve hours at the utmost. It is, in truth, of the nature of apoplexy, and though generally only temporary, it may be, or may become, identical with that disease. The state of the breath should always be examined in all doubtful cases. An account of the origin and progress of the malady would, of course, clear up all difficulty; but sometimes this is not to be obtained.

Dr. Abercrombie has well described three different forms or modes of attack in apoplexy. In the first division of cases which he designates primarily apoplectic, the patient falls down suddenly, deprived of sense and motion, and lies like a person in a deep sleep; his face generally flushed, his breathing stertorous, his pulse full and not frequent, sometimes below the natural standard. In some cases convulsion occurs; in others rigid contraction of the muscles of the extremities; and sometimes contraction of the muscles of one side with relaxation of the other. In this state of profound stupor he may die, after various intervals, from a few minutes to several days; or he may recover perfectly without any bad consequences of the attack remaining; or he may recover from the coma with paralysis of one side. This paralysis may disappear in a few days, or subside gradually; or it may be permanent, either in a part or in the whole of its extent.

The second form of the disease, which he characterises as not primarily apoplectic, begins with a sudden attack of pain in the head; the patient becomes pale, sick, and faint; generally vomits, and frequently, though not always, falls down in a state resembling syncope; the face pale, the body cold, and the pulse very feeble. This is sometimes accompanied by slight convulsion. In other cases he does not fall down, the sudden attack of pain being only accompanied by slight and transient loss of recollection. In both cases he generally recovers in a few minutes; from the first effects of the attack is quite sensible and able to walk, but continues to complain of headache; after an interval, which may vary from a few minutes to several hours, he becomes oppressed, forgetful, and incoherent, and then sinks into coma, from which he never recovers. In the greater proportion of cases of this class, no paralysis is observed; but there is sometimes hemiplegia.

In the third form, of what he names paralytic cases, the patient is suddenly deprived of the power of one side of the body and of speech without stupor; or if there be stupor at first, this soon disappears; he seems sensible of his situation, and endeavours to express his feelings by signs. In the farther progress of this form of the disease, great variety occurs. In some cases it passes gradually into apoplexy, perhaps after a few hours; in others, under proper treatment, the patient rapidly and entirely recovers. In many cases the recovery is gradual, but at length complete; in others it advances only to a certain point, leaving the patient maimed; or, again, there is no improvement, and he remains speechless, paralytic, and bed-ridden for the rest of his days.

The appearance of a patient labouring under an attack of apoplexy is in general very characteristic. He is seen almost always lying on his back, in a state of complete insensibility, which defies our efforts to arouse him; the face is generally red and turgid;

the eyelids almost cover the eyes, which are fixed and devoid of intelligence; the pupils are often dilated; but at times contracted almost to a point; and in either case are found scarcely to vary their dimensions under the varying influences of light and darkness; the lips and nostrils have some degree of trembling movement communicated to them by the deep and snoring breath; the lips are closed, and the nostrils less expanded, in inspiration; while the latter widen in expiration; and the former slightly part and give exit to the air in gentle puffs, so as sometimes to remind one of their motion in a practised smoker. At times when there is deep seated mischief in the brain, affecting the motor portion of the fifth pair of nerves on one or both sides, one or both cheeks are seen to become distended during expiration, and then suddenly to sink back with a flapping movement as the air is drawn in, as though they were thin membranes without any contractile powers of their own. Respiration is slow, and deep, and snorting: this last character being almost distinctive of the disease. The pulse is very various; if it is often slow, and hard, and strong, it is also often rapid, and soft, and feeble, and even marked by irregularity and intermissions. In some cases, although we are quite unable to rouse the patient from the state of stupor in which he lies, the irritation of a finger or of a feather just tickling the eyelids or the lips is followed by an appropriate effort for its removal; sometimes the hand is raised to the part which may indicate that the functions of the brain are not wholly suspended; sometimes there is only a closure or contraction of the part touched, which may be referrible to the persistent activity of the true spinal system. The occurrence of movements of either kind must be considered as a symptom of a somewhat favourable character, as evincing that the mischief is not so severe, or not so extensive, as in those cases where similar attempts produce no movements of any kind. The loss of the power of swallowing small quantities of fluids, introduced into the mouth so as to run down into the pharynx, constitutes another evidence of injury to the true spinal system, and is to be regarded, when persistent, as of the worst import. And the same remark applies to the relaxation of the sphincters and involuntary discharge of the fæces and urine.

Apoplexy may be fatal without the presence of paralysis: yet they are often combined. We have mentioned that the flapping motion of the cheek may indicate paralysis of a portion of the fifth pair of nerves; we think that of the other nerves of the face is seldom very perceptible during the continuance of insensibility; but even then it may be remarked that the arm and leg on one side are occasionally moved; while those on the other are at all times motionless; or one arm, after being raised, will be seen to return to its place, so as to evince some action of its own muscles in guiding and supporting it; while the other may sink by its own gravity like a flaccid and lifeless mass, and thus indicate its paralysed condition.

In some few instances of apoplexy, the patient lies for several days insensible and motionless, and yet gradually recovers the use of his understanding, and his muscular strength; but frequently he is permanently deprived of the command of one side of his body, or he regains it imperfectly after a time; his mind sustains a shock which may not be completely recovered from; his sensations and perception becoming less accurate, and his memory and powers of combining being much weakened, or at least his faculty of expression; for even while his memory and imagination are unimpaired, he is not always able to find appropriate words to express the notion which is excited in his mind. We remember one instance in which the chief infirmity left by an attack of apoplexy was a liability to an occasional uncontrollable burst of laughter, which, though arising during conversation, was independent of anything ludicrous in its character; and, indeed, came on in the instances in which we witnessed them, while the gravest subjects were under discussion, so as to be particularly inappropriate and embarrassing.

The duration of fatal cases may vary from half an hour, or even less, to seven or eight days; but is for the most part intermediate between these two extremes; the greater number of deaths falling after twelve and before seventy-two hours have elapsed from the commencement of the attack.

In a disease which is always dangerous, and very often fatal, it is of the utmost importance to be acquainted with the premonitory symptoms which, in some cases, gives a warning of its approach; and we shall therefore describe, in the words of the late Dr. Cooke, such as have been considered deserving of this title: "The attack of apoplexy is sometimes sudden; sometimes we are warned of its approach by the following symptoms: a dull pain in the head, accompanied by a sense of weight or heaviness; vertigo; drowsiness; frequent fits of incubus; involuntary contractions of the muscles of the face; cramps or spasms in various parts of the body; inspirations deeper than natural; fulness and redness of the countenance and eyes; obscurity or irregularity of vision; bleeding from the nose; ringing in the ears; faltering in speech, or using one word for another; loss of memory; and diminished sensibility of body or mind, or of both." Of these symptoms, however, some are only occasional; and some are entitled to little confidence, at least, if occurring singly. Of such as our own experience has taught us to rely on, giddiness is the most important, if, either being constant, it be aggravated, or, being occasional, it be produced under such circumstances as tend to increase the pressure of the circulation within the head, — such as the horizontal posture, or a more depending position of the head,—as in stooping, or any exertion of the body, which may at once increase the force and frequency of the heart's action, while it creates an impediment to the return of the blood through the veins. The effort to pull on a tight boot, or even that of straining at stool, or the disturbance of the circulation produced by a severe fit of coughing, may, in this way, afford some intimation of the state of the brain. But, besides giddiness, there is a debility from congestion, which should put us on our guard. Thus, if a patient complain of weakness while his aspect and pulse give no intimation of such a condition, the one being full and florid, and the other either strong or without feebleness; if the history of the case exhibit no circumstance to account for his debility; if it be found, upon inquiry, that his sleep is heavy, and unrefreshing, so that in the morning the want of strength is most distressing to him, while he revives somewhat towards evening or night; if he tell us, too, that nutritious food does not strengthen him, and that wine and porter have a contrary effect; in such a case as this, even though less strongly marked than we have here described it; and though the pulse were quick and soft, or even weak, we should do well, at least if our patient were, in other respects, predisposed to the disease, to foresee in this condition the threatenings of an apoplectic seizure. We have seen cases of this sort in which there may have been giddiness, or other important symptoms, which a minute inquiry brought to light, but where weakness was so much the prevailing topic of complaint as to have sometimes deceived the medical attendant, and to require much care in order to make out the real nature of the malady.

Drowsiness is a symptom often insisted on as premonitory; but if by the word a disposition to sleep by day be intended, it seems to us as of little value, being often absent where there is congestion of the brain, and often present in diseases of a totally different nature. The fact of the sleep being heavy and unrefreshing is more characteristic. An inclination to sigh, manifested independently of any moral cause of depression, is always suggestive of some cerebral affection; and cramps of the legs at night, where there is no irritation of the bowels to account for them, justify apprehension of some threatening mischief within the head; but these last two symptoms arise much less frequently than those of giddiness and weakness before mentioned, and no favourable judgment is to be drawn from their absence. They are, therefore, only occasional guides. Impaired sensation or motion in any part, however inconsiderable, as constituting a form of the kindred malady — palsy — should always direct attention to the probable supervention of apoplexy. As apoplexy may terminate in palsy, so may palsy be followed by apoplexy; and they who have suffered from an attack of one of the two must ever afterwards be regarded as prone to either.

We do not here attempt to distinguish, by means of their premonitory or attendant symptoms, the varieties of apoplexy presently to be mentioned, since we believe that no rules entitled to confidence can be laid down for recognising them severally, during the life of the patient; and we conceive that this nicety of diagnosis would be wholly unprofitable for practice, even if attainable. It is only after death that such a classification of cases can with any certainty be formed; as it is in the revelations of the dead house alone that it has originated.

What, then, are the morbid changes discovered after death in fatal cases of apoplexy? These may be arranged under three heads, — viz.

First. Effusion of blood upon the surface, or into the substance of the brain, constituting sanguineous apoplexy;

Secondly. More or less of serous fluid effused between the membranes, or into the ventricles of the brain, indicative of serous apoplexy;

Thirdly. A condition of the brain and its membranes, to all appearance natural, so as to justify the designation of simple apoplexy.

We have an example of simple apoplexy in the case of a late distinguished member of the Royal Society, who was seized when attending a meeting of the Council of that body, and, notwithstanding prompt assistance, died within five minutes from the commencement of the attack. In reference to this instance of the disease coming on so suddenly, and proving so rapidly fatal, we read, nevertheless, in the Lancet, for March 1845, the following statement:—we believe we are correct in stating in general terms that no sufficient cause of death was disclosed by the post mortem examination; that there was no extravasation of blood within the cranium, nor any morbid state of the heart or great vessels.

Dr. Cooke recognises this form of apoplexy, where he says, there are, however, several cases on record, in which, on examination of the head after this disease, nothing morbid or uncommon has been found. Dr. Abercrombie gives examples of what he has termed simple apoplexy, and states it to be a conclusion at which he has arrived, that there is a modification of apoplexy which is fatal, without leaving any morbid appearance that can be discovered in the brain. Dr. Copland names several authors, both British and foreign, who have described cases of apoplexy in which no morbid appearance could be detected after death, and speaks of one such as occurring in his own experience.

The observations to which we have here referred have not only established the fact of the existence of the, so called, simple apoplexy, but have farther encouraged a doubt as to the importance of the serous effusion, in cases in which it is observed after death, in contributing to the seizure and its consequences. Dr. Abercrombie has well stated the facts which bear upon this question, and the inferences deducible from them; and we therefore cite these almost in his own words. "The cases which are referable to these two classes (viz. simple apoplexy, and that accompanied by serous effusion) are not distinguished from each other by any such diversity of symptoms as can be supposed to indicate any essential difference in their nature.

"Without any apoplectic symptoms, we find serous effusion in the brain, in an equal or in a greater quantity than in the cases of the second modification.

"It is therefore probable, that in these cases the effusion was not the cause of the apoplectic symptoms.

"It is probable that the affection which has been called serous apoplexy is to be considered as simple apoplexy, terminating by effusion."

The independent researches of the late Dr. Sims, as published in the 19th volume of the "Transactions of the Royal Medico-Chirurgical Society," have led him, by a similar train of reasoning, to the same result, namely, "that in very many instances of sudden or speedy death, which have been supposed to be occasioned by the presence of serous fluid, discovered on dissection in the membranes or ventricles, death is not attributable to this fluid or to serous apoplexy; but the inference is much more reasonable that these cases may be referred to simple sanguineous apoplexy, the fluid in the brain having nothing to do with the fatal event."

We can no longer, then, offer a special plan of treatment for serous apoplexy, the very existence of such a disease being thus rendered problematical; and a further doubt arising both from what we have observed and read, whether such a disease, if it do exist, can be recognised during life.

In apoplexy with extravasation, the effused blood may be found on the surface of the brain, in the cavity of the arachnoid membrane or in the meshes of the pia mater; it may be found in the substance of the cerebrum, enclosed in walls; or it may have burst its bounds so as to fill the ventricles, or reach the surface. Again it may, without rupture of the substance of the brain, be poured out so as to fill the third and fourth ventricles, and be lodged about the medulla oblongata and base of the brain. Of all the situations in which hæmorrhage is found to occur, the most common are those parts of the brain near one or other of the corpora striata. Cases have occurred in which it was supposed that blood had been so effused as to form a layer, separating the fibrous portion of the dura mater from the serous membrane attached to it; but a more careful observation of similar appearances has rendered it probable that this conclusion was erroneous. Hæmorrhage may take place in the substance of the cerebellum or tuber annulare, and in the latter case may prove fatal, even when its quantity is inconsiderable. It is, of course, impossible to form an estimate of the exact amount which, occurring in any given portion of the encephalon, shall produce apoplexy rather than palsy, and death in either way. We must remember that in the case of extravasation of blood, as well as n that of serous effusion, the malady before us may be only simple poplexy, with this complication; the recognition of such a disease s simple apoplexy makes it doubtful, at least in some cases, how ar, if at all, the symptoms are to be referred to the coexisting æmorrhage. We conceive that it is sufficiently established that he hemispheres of the brain are the seat of intelligence, and that pressure upon them must, if considerable, produce the comatose state of apoplexy; while the medulla oblongata presiding over the important function of respiration, and being indeed the centre of the whole cerebro-spinal system, any laceration or lesion of it must be extremely perilous to life, even though there be little or no loss of consciousness consequent upon it.

The course and symptoms of sanguineous apoplexy no doubt vary with the extent and seat of the effusion, but not in such a way as generally to afford us any very precise and certain information on these points, prior to the institution of a necroscopic examination. According to Mr. Solly, effusion *into* the medulla oblongata, a rare event, gives rise to the most rapidly fatal form of apoplexy, and the only one that resembles and is liable to be mistaken for suddenly fatal disease of the heart: while blood effused on the surface of this body, whether directly from neighbouring vessels, or indirectly conveyed to it from those of the thalami and corpora striata, proves equally, but less rapidly, fatal, as a consequence of pressure upon the centre and source of the function of respiration.

Effusion into the pons Varolii produces paralysis of one or of both limbs, according to its extent; but when the first effect has passed off does not disturb the intellect. As the blood advances to the medulla, so are the respiratory organs affected; first the muscles of respiration are irregularly and unnaturally stimulated, and the sensibility of the respiratory passages abnormally exalted, until the excitation is succeeded by paralysis, and the patient dies suffocated. Effusion into, or on the crus cerebri produces paralysis of the extremities on the opposite side of the body, and often of the opposite eye, from its affecting the optic nerve, without interfering with the sensorium.

The author referred to just above believes it to be an invariabl fact, that extravasation into the corpus striatum is followed by paralysis, and that the function of this body is clearly shown to b connected with volition, and the production of voluntary motion but that those physiologists have advanced too rapidly in theory, wh assign to this body the office of producing the motions of the lowe extremity, and to the thalamus that of presiding over those of th upper.

Extravasation into the thalamus of the optic nerve is not accompanied by any unequivocal lesion of sensibility, as might be suppose if the theory that it is the ganglion of the sensory column wer correct. This body is seldom injured without paralysis of some par or other being the result; but Andral has recorded an exampl where the only symptoms referrible to the presence of a clot of bloo in the right optic thalamus, was loss of motion in the left leg an arm, without any affection of sensation.

Lesions of the cerebellum are always more or less followed b hemiplegia, and, as in the instance of the brain, on the opposit side of the body. Sight and hearing are generally secondarily a fected from the propinquity of the optic ganglia and auditory nerve

The above results of Mr. Solly's enquiries into the functions of some of the different portions of the brain will, at times, enable us to conjecture the probable seat of mischief in actual cases of apoplexy or paralysis, but upon the whole is calculated to inculcate caution rather than to inspire confidence in this department of diagnosis.

As regards the source of the hæmorrhage, — it may spring from ruptured vessels on the surface or in the substance of the brain, from the vessels of the choroid flexus, or even from one of the sinuses. We are told that it is often difficult to find the ruptured vessels; at other times they may be traced; not unfrequently, the arteries of the brain are found diseased; sometimes they are undergoing those successive changes by which their coats are converted, in part at least, into bone, hence they appear to be weakened in their structure; or again, the formation of a smaller aneurism may have preceded the fatal outpouring of their contents.

Among the exciting causes of apoplexy must be reckoned all strong passions, as anger and the like, all excessive bodily exertions, and immoderate indulgence in wine or other spirituous drinks.

The predisposing causes are numerous, and of these some may at times become exciting causes. We proceed to enumerate some of the most influential: —

Among the first to be noticed is hereditary predisposition, it being a fact, however it be accounted for, that they whose parents or near relatives have suffered from paralysis or apoplexy are, *cæteris paribus*, more prone to these diseases than others not so circumstanced.

It seems distinctly proved both by the researches of M. Rochoux, and by the combined experience of this author and Dr. Burrows, that the tendency to apoplexy increases with advancing years; and though we may not number more cases of this disease in the extreme of age to which life may be protracted, yet it seems probable that the proportional mortality continually increases. We mean that if the cases of apoplexy for those above sixty years of age be somewhat less numerous than at some earlier periods of life, yet they will be found to bear as great or a greater proportion to the general population who have passed that age.

The form and habit of body may also predispose to this malady, but we believe, with Dr. Copland, much less frequently than is usually supposed.

Of diseases which are wont to be associated with apoplexy, there is none more important than that which has been called Albuminuria, or, after its discoverer, Bright's disease. And this appears to be fruitful of mischief in two ways; that is to say, both by means of the uneliminated urea, which is known to exist in the blood, and may act as a poison to the brain; and more remotely as conducing to those changes in the coats of the arteries, to which we have already alluded, as rendering them more liable to rupture. Akin with the former mode of action must be reckoned that which takes place in ischuria renalis, or suppression of urine, which, if complete and unrelieved, is sure to be followed by coma and by death. Other diseases strongly predispose to apoplexy, as those in which there is a permanent impediment to the return of venous blood from the head, whether the obstruction exist in the lungs, as in cases of chronic catarrh and emphysema, or its primary seat be in the heart; and whether, in the latter case, it consist in narrowing of the orifices for the entrance or exit of the blood, in imperfection of the valves, or in feebleness of the muscular parieties; any of which morbid changes must give rise to delay in the transmission of the vital fluid, and occasion some gorging of the veins from which it is supplied. Hypertrophy of the heart has been considered, on high authority, to predispose to apoplexy; we will not deny that it may sometimes deserve this imputation; yet, we would remark that—unless the hypertrophy is such as more than to meet the demand for increased power in the heart, arising from the dilatation of the left ventricle—there would be no increased momentum of the issuing blood, and no stress greater than ordinary on the vessels of the brain. It may even happen, when there is hypertrophy of the heart, that local congestions arise from blood retarded in the venous, rather than too powerfully propelled through the arterial vessels.

Other predisposing causes of apoplexy are long and intense thought,—the habitual indulgence of exciting passions and appetites, — free living either in respect of eating or drinking,—laborious occupations,—suppressed discharges, as those from hæmorrhoids, long established ulcers, and so forth, among which should be reckoned infrequent or insufficient evacuations of the bowels, — extremes of temperature, and perhaps, too, the use of tobacco, whether it be smoked or taken as snuff.

An important service has been rendered to pathology and medicine, by the correction of an error which had been adopted by some of high rank in the medical profession, with regard to the circulation of blood within the head. It was argued that the cranium forms a cavity with unyielding walls, which prevent enlargement by any force within, or diminution in consequence of pressure from without; that it must always be exactly filled by its contents; and that the brain itself, being incompressible and unchangeable in bulk, the quantity of blood must always be the same, subject to no increase, as a consequence of disease,—admitting of no reduction, as an effect of bloodletting or other depletion. Hence it was further contended that the only changes of which the circulation within the head was capable, was an altered distribution of this uniform mass of blood, in which the arteries might be gorged at the expense of the veins, or *vice versâ;* but the condition of general congestion was altogether denied. These theoretical inferences seemed to be supported by some experiments of Dr. Kellie, and further strengthened by his observations and arguments. We cannot here enter upon a particular account of the facts and reasonings which he brought to bear upon this question, nor can we give in detail all that has been recently urged by Dr. Burrows, in refutation of his conclusions. It is enough to mention that this last author, in some fresh experiments very carefully conducted, has obtained results opposed to the former ones. Thus he has shown that the brain was in a very congested state in a rabbit killed by strangulation, whereas it was pallid and anæmic in one that died by bleeding from the carotid artery and jugular veins. Again, of two rabbits killed by prussic acid, in one, which was suspended by the hind legs for twenty-four hours, the membranes and vessels of the brain were dark and turgid with liquid blood; while in another killed by the same poison, and suspended by the ears for the same length of time, the membranes and substance were pallid, the sinuses and other vessels exsanguined. The influence of an obstacle to the return of venous blood on the cerebral circulation, is strongly contrasted with that of large detraction of blood in the former two, the different effects of different positions is clearly shown by the latter two experiments. M. Magendie had, some years ago, called attention to the serous fluid contained in the cavities of the cranium and spine, as fulfilling probably important mechanical functions in states of health and of disease, and it seems that Dr. Burrows attributes to this fluid the office of equalising or regulating the pressure upon the brain. Be this as it may, he has done good service in having removed an erroneous doctrine; although some things remain still to be explained. We must observe, however, that we had always distinguished between pressure and compression. It is physically impossible that the brain should not undergo a greater pressure when gravity co-operates with the other forces which cause pressure on it, as when a man is suspended by the heels, than it does when gravity counteracts in part those other forces, as when he is standing upright. This, and analogous propositions are equally clear, whether the quantity of blood within the skull be invariable or not, and altered pressure is an adequate cause of altered functions.

In the treatment of apoplexy, if the face be flushed and turgid, and the pulse of even moderate strength, no time should be lost in employing powerful remedies, the chief of which is early depletion by bleeding; and it will be found that the action of the heart and arteries will acquire increased freedom and force, as the bleeding has the effect of lessening the stupefactive pressure existing on the brain. On the person's being seized, due care must be taken to remove all compression from about the neck, to place him in a spacious apartment, to support him in as erect a position as possible, and to allow a free admission of cool air. Probably it might be advantageous to put his legs and feet at the same time in warm water. These steps being adopted, sixteen or eighteen ounces of blood should immediately be taken away in a full stream.

If the first bleeding has not been of service, and the disease is unequivocally established, the operation should quickly be repeated a second time in four or five hours. The quantity of blood to be drawn off must be regulated by the constitution and habit of the patient, by the circumstances of the attack, its violence and duration, the effects of the previous evacuations, and the state of the circulation, particularly the relief of the pulse and breathing, and the alteration of the complexion.

After general bleeding, leeches may be applied, if necessary, to the temples, or the scarificator and cupping-glasses to the occiput; and when sufficient evacuations have been procured by these means, we may then apply a large blister to the nape of the neck, and small ones to the extremities, together with cataplasms of mustard to the soles of the feet, or warm fomentations.

Should apoplexy appear in a gouty constitution, or after symptoms of the gout, the lancet, I think, may be used with safety and advantage, although cupping from the nape of the neck may probably supply its place.

The most available plan for acting promptly and powerfully on the bowels, a means of relief only second in importance to blood-letting, is to place a piece of sugar, to which a drop of croton oil has been added, in the mouth of the patient. This may be subsequently washed down with a small portion of fluid, so as to secure its being swallowed, by which its action will be facilitated, though even when remaining on the tongue, it may produce the desired effect. In order still further to promote its action, and to produce a derivative effect by creating an irritation in distant parts, a purgative clyster should be administered, and we think the enema of aloes, of the "London Pharmacopœia," one of the best that can be employed for fulfilling this double purpose. We should not hesitate to repeat both the croton oil and the clyster, every three or four hours, until either free evacuations have been obtained, or symptoms of sinking have commenced.

Cold evaporating applications to the head have been found advantageous in some instances, and by some physicians have been thought preferable to blisters.

Emetics are made use of by some practitioners. Where the disease has been brought on by intoxication, or by a large undigested meal distending the stomach, obstructing the free expansion of the lungs, and thus loading the vessels of the head with more blood than ought to be there, the exhibition of an emetic may be proper, and particularly so if it has been preceded by venesection; or should vomiting arise naturally, the stomach may be relieved by washing it out with a little camomile tea. The frequency with which attacks of apoplexy occur after a full meal, is a convincing proof of the immediate connexion which subsists between the stomach and brain: and where the attack has been occasioned by an over quantity of food received into the former, the sooner it is unloaded, the sooner will the obstruction of the circulation be relieved. Here, then, an emetic of about half a drachm of the sulphate of zinc may be administered with great propriety; and should the desired effect not be produced in ten minutes or so, the same dose may be repeated. Where apoplexy arises from, or is occasioned by, an extravasation either of blood or serum on the brain, more particularly the former, it cannot be denied, that an emetic would be a very hazardous remedy. Emetics in apoplexy, it seems to us, are in general to be avoided, yet circumstances may arise, such as those just pointed out, which make their employment proper, or even necessary. A contingent evil must then be hazarded for the removal of an existing urgent one.

In those cases of apoplexy which occur in anæmic individuals, where the face is pale and the pulse feeble and intermitting, the only deviation to be made from the plan of treatment just laid down, consists in an absence from general bloodletting for which we should substitute cupping at the back of the neck, or the application of leeches behind the ears. After such local depletion, the pulse will often become stronger, and more regular; a sufficient sign of the propriety of the first detraction of blood in this way, and a warrant, if need be, for its repetition. As regards the administration of purgatives by the mouth and rectum, we should make no distinction between these cases and those occurring in plethoric individuals. Neither reading, nor experience has convinced us of the propriety of administering stimulants even in the least objectionable form of the sesquicarbonate of ammonia.

When the patient has recovered from a fit of apoplexy, if there be neither headache nor giddiness, little remains to be done but to keep him quiet in body, and calm in mind, to confine him to a spare diet, and to act gently on the bowels, for which a drachm of Epsom salts, given in camphor mixture or mint water, two or three times a day will serve our purpose as well as anything; and to watch closely, and act promptly if any symptom comes on which threatens a relapse. If headache or giddiness remain after the return of consciousness, the continuance of more active purgation may be requisite, as by croton oil, — a medicine very powerful for the relief of congestion of the head after bloodletting has been carried as far as it can be with advantage. It must not be forgotten, however, that opposite conditions produce the same symptoms, so that without care we might fall into the error of treating a giddiness, the result of depletion, as though it depended on congestion. The effects of position and of treatment, and the state of the pulse will assist our diagnosis. An upright posture aggravates the giddiness of the former, a recumbent or stooping one relieves it; the reverse of this as we before pointed out, occurs in the latter kind. If the giddiness be of the former class, it is to be relieved by a more liberal diet, a less active drain on the bowels, accompanied by a mild tonic, or even gently stimulating treatment. If there be paralysis after recovery from apoplexy, this may demand a continuance of active purging, say two or three times a week, by croton oil, while at the same time mild diaphoretic medicines should be given; or if the general powers be feeble, light tonics may be useful at the same time; but the treatment in this case will be more fully detailed under the head of paralysis. We know, from long experience, that local mischief within the head may be advantageously treated by occasional active catharsis, while tonics, and even a moderate use of stimulants, may be required to maintain the general powers, and to enable the patient to bear the severer part of the treatment. A plan of this kind has always seemed to us best suited to the condition of recent paralysis, or such other cerebral affections of a congestive character as follow apoplexy.

When apoplectic symptoms proceed from opium, or any other narcotic poison taken into the stomach, the offending matter ought to be got rid of as soon as possible, by employing the stomach-pump, or exciting vomiting with tartarised antimony or sulphate of zinc, should none have arisen spontaneously. Tickling the fauces with a feather is sometimes sufficient of itself to produce vomiting; and may always be tried in aid of other emetics, whose action is farther favoured by pouring cold water over the head and neck. After the expulsion of the poison by the stomach-pump if this be at hand, or by the other means mentioned if this cannot be procured at all, or not without delay the introduction of strong coffee or vinegar and water into the stomach has been recommended on high authority. No measure is so important as that of keeping the patient awake by walking him about between two attendants holding him by either arm. A brisk purgative of senna and salts, too, should be given, and the head kept cool by cold cloths. Leeches or bloodletting are seldom necessary. Where the dose has been such or so long taken as to defy these generally successful means of arousing the patient; artificial respiration carried on for several hours has been known, in more than one instance, to be effectual in saving life. But for full details of the proper treatment to be pursued, we refer the reader to the head of Poisons. If apoplexy arise from excessive intoxication, we must resort to the means suggested above for emptying the stomach. This evacuation is generally followed by speedy improvement; but if otherwise, active purgation, and at a later time detraction of blood, would be advisable. If, indeed, there should remain total unconsciousness, with stertorous breathing, the treatment would not be different from that of apoplexy coming on in any other way.

If the disease arises in consequence of the suppression of piles, leeches should be applied to the hæmorrhoidal veins, fomentations must be employed, and the intestines be stimulated by means of aloetic purges.

Those who, from a plethoric state of the blood-vessels of the head, are predisposed to an attack of apoplexy, or have recovered from one, will act prudently in confining themselves to a very spare diet, consisting principally of vegetables, carefully abstaining from wine, spirits, and malt liquors, from all high-seasoned food, and from meat suppers. They should likewise avoid any long or continued exertion of the mind, any giving way to passion or violence of temper. They ought also to abridge the usual number of hours allotted to sleep. A stooping posture must be shunned. Persons predisposed to apoplexy should likewise be careful to keep the body open by some gentle laxative, taken occasionally; and such moderate exercise ought to be used as will support the perspiration without hurrying respiration, or exciting heat. Nothing tight should be worn round the neck, which might retard the return of blood from the head to the heart; and when in bed, the head ought to be supported at a proper height. The feet should be kept warm and dry, and the extremes of heat and cold must be avoided. Nothing has a better effect in preventing apoplexy in those who are predisposed to its attacks, than the occasional application of the scarificator, succeeded by cupping-glasses, or a perpetual issue between the shoulders, or a seton in the neck; but great care must be taken not to allow them to dry up without opening some other drain in their stead.

We would, however, caution all persons against subjecting themselves or their patients to unnecessary discipline and annoyances, in their adoption of preventive means. Temperate or abstemious habits of living, and the avoidance of all excitement, both mental and physical, and the other precautions in lesser matters, as pointed out above, cannot be too strictly observed. But for the rest, we hold that the watching of an intelligent medical adviser, who can discern the first approaches of danger and be prompt in taking remedial steps when they are required, and only when they are required, is much better than any system of periodical bloodlettings or constant local irritations or discharges. For ourselves, we prefer the chance of life being abbreviated, to the certainty of its being rendered miserable. We speak from experience when we say, that a small bloodletting from the arm, a few leeches behind the ears, or an occasional brisk purgative, judiciously resorted to under professional advice, may prolong life as surely and with much more comfort to the patient than is compatible with all the routine of preventive measures, accompanied by the constant apprehension that can alone enforce their observance.

When an attack of apoplexy is immediately threatened, bloodletting is the remedy most to be relied on. The extent of the bleeding can only be determined by the nature of the case. Under doubtful circumstances, where the symptoms are not very urgent, the application of several leeches to the temples, or scarifications with cupping at the back of the head or neck, may prove sufficient. Cold applications to the head may be useful auxiliaries.

It may not be improper to remark here, that as the vital principle frequently remains in a latent state for some time, and as we are yet unacquainted with any certain criterion between positive and apparent death besides that of putrefaction, some appearances of incipient decomposition should be allowed to take place, in every case of sudden decease, before interment. The cessation of circulation and respiration, and coldness, with rigidity of the limbs, taken separately, are not of sufficient importance, and even when combined, leave a slight opening for doubt; but putrefaction is the only certain proof of the occurrence of death which can be considered as conclusive. In warm countries, where it is customary to bury the bodies within four-and-twenty hours, I have great reason to fear that premature interment sometimes takes place.

PARALYSIS, OR PALSY.

Palsy is a diminution or total loss of the power of motion or sensibility in some part of the body, in some instances confined to a particular part or set of muscles, but more usually affecting one entire side of the body, from the head downwards, known by the name of hemiplegia.

If the power of motion and sense of feeling in the half of the body, taken transversely, be impaired, the complaint is denominated paraplegia. Where there prevails great tremor in the different muscles, the term of shaking palsy has been employed. Many degrees of paralytic affection are met with in practice, from the torpor and weakness of a single finger up to complete general paralysis; among which will be found amaurosis, or palsy of the optic nerve, palsy of the muscles of one side of the face, palsy affecting only the muscles of deglutition or the neck of the bladder, or palsy of an arm or hand. That such cases do occur is unquestionable; but to account for such partial palsy is not in all instances an easy matter.

There is no necessary correspondence between the degrees in which the functions of motion and of sensation belonging to a part are simultaneously impaired. So far is this from being the case, that the motor power may be more or less diminished or totally abolished, while the faculty of sensation remains intact; or this latter function may be diminished in activity or be wholly lost, while the former is little or not at all weakened.

"When either motion or sensation is entirely lost," writes Dr. Copland, "the paralysis is complete as respects that function; if either be impaired only, or not altogether lost, the disease is incomplete. If only one function is affected, the paralysis is imperfect; if both sensation and motion are impaired, the disease is perfect. Thus palsy may be not only complete or incomplete, perfect or imperfect, or both complete and perfect or incomplete and imperfect, but it may even be complete as respects either function, and yet imperfect, inasmuch as one only is lost; or it may be incomplete, and yet perfect as regards the affection of both functions." We quote these passages both because they express concisely the various combinations of impaired functions which are generally known to exist in this disease, and because we wish to give currency to the conventional meanings here attached to the words complete and perfect, which are little attended to by ordinary writers. At the same time we must remark, that in our apprehension these epithets would have been more appropriately employed if the significations respectively given to them had been exactly reversed.

As paralysis must be considered to depend, in the vast majority of instances, upon an injury of some portion of the nervous system, the fact just insisted upon, of the want of correspondence between the affections of the two functions of motion and sensation, may be taken as conclusive evidence that these functions are imparted by distinct nerves or fibrils of nerves. This indeed is now universally admitted; and with regard to all the nerves physiologists are, for the most part, agreed in assigning to them their appropriate offices as ministers of the will in the production of motion, or as channels whereby impressions are conveyed to the centre of perception. The account of these details must of course be sought for in works devoted to the science of physiology; it concerns us here only to advert to the general law, of which we may have to make more special application hereafter, and to point out how far anatomy has succeeded in tracing the parts of the nervous system concerned in the performance of one or other of these functions of motion or sensation. Now, as we have stated, it appears to be ascertained, with regard to the nerves generally, that particular pairs are endowed with peculiar and exclusive functions: thus the first pair, or olfactory nerves, are so designated from their office, as nerves of the special sense of smell; the second pair, or optic nerves, are in like manner devoted to the special sense of sight; the auditory nerves, or portio mollis of the seventh, preside over that of hearing; while the first and second branches of the fifth are nerves of ordinary sensation. The portio dura of the seventh pair, or the facial nerve, is that through which the movements of the various muscles take place which give its varied expression to the countenance. Thus each of these nerves, or pairs of nerves, is adapted to a certain use, and is incompetent for others; if it be a nerve of special sense being unfit for the transmission of common sensation from without to the sensorium, incompetent also for the production of motion under the influence of the will. But other nerves are in truth double, or made up of two portions having different functions, and, therefore, communicate a double function to the parts to which they are distributed. Thus the third branch of the fifth pair of nerves is seen to be made up of one portion passing through the Gasserion ganglion, from which it derives sensitive powers; while the other portion, having a different origin, and which joins the former without entering the ganglion, conveys the motor influence of the will to the muscles to which this compound nerve is distributed. In like manner, in the spinal nerves we have instances of compound nerves, of which the anterior portions are endowed with motor powers, while the posterior, connected with ganglia, are the channels by which impressions are conveyed from their sentient extremities to the brain.

And this comprises all, or almost all, that we know regarding the correspondence of the morbid change in the cerebro-spinal mass and the seat and nature of symptoms which we observe. Observation has not yet taught us what part of the brain must suffer in order to produce a loss of sensation rather than of motion, or in what part to look for the cause of the impaired functions of the upper and lower limbs. It has long been an object to obtain this accuracy in diagnosis; but M. Andral showed some years ago that the attempts made up to that time had been unsuccessful, while more recent authors fail to give us the information of which we are in search. Thus Dr. Todd says, in a lecture published in the "Medical Gazette" of Aug. 4. 1848:—"The parts of the brain the lesion of which is most apt to produce hemiplegia are the corpus striatum and the optic thalamus; and the most frequent lesions of them are softening, clot, or abscess. It is remarkable that lesion of the optic thalamus should produce nearly or precisely the same effects as lesion of the corpus striatum. Disease, also, in the immediate vicinity of these parts will cause paralysis; but if the lesion be situated quite near the surface of either hemisphere of the brain, and be not of such a nature as to produce pressure, there will be no paralysis. A clot or a tumour in the centre of the centrum ovale will not produce paralysis if it do not cause pressure or interfere materially with any of the fibres of the corpus striatum. When you get inflammation of the dura mater and pia mater, you have effusion of lymph and of pus, which, as it increases, causes pressure on the surface of the brain, which is then extended to the corpus striatum and optic thalamus, and thence results the paralysis.

"If some of the deeper seated parts, such as the crura cerebri, are affected, we also have paralysis, because the crura cerebri, as the bond of union between the corpora striata and spinal cord, form a part of the great centre of volition. Disease of the cerebellum or its crura, provided it be deep seated, will also produce hemiplegia; this is also due to the connection which is formed between the hemispheres of the cerebellum and the fibres of the pyramids in the pons Varolii."

Now these passages, quoted from so high an authority, are instructive, as illustrating the pathology of paralysis, and of hemiplegia more especially; while, at the same time, they show how little of precision there is in our knowledge of the consequences of lesions of particular portions of the encephalon. Mr. Solly, too, adduces a case in which effusions of blood, confined to the right corpus striatum, which had been in the first instance accompanied by paralysis in both extremities of the opposite side, was at the close marked by that of the left arm only; thus invalidating, as he remarks, the opinion according to which isolated lesions of the corpus striatum should modify motion only in the inferior extremity. Again, the same writer observes, that "Extravasation into the thalamus of the optic nerve is not accompanied by any unequivocal lesion of sensibility, as might be expected if the theory that it is the ganglion of the sensory column were correct. It is indeed true that morbid anatomy has not yet shed any clear light on the functions of this part, beyond the fact that volition appears to flow through it; for it is seldom injured without paralysis of some part or other being the result. If it is in any way connected with the phenomena of sensation, as its communication with the posterior columns would lead us to believe, it is not entirely devoted to this purpose, for there are many instances on record in which its lesions have been accompanied with paralysis, while the sensibility of the parts paralysed has remained intact. In truth, I believe with Andral that though sensation is perhaps more frequently affected by cerebral hæmorrhage than motion, it has been impossible, up to the present time, to detect, in the nature or in the seat of the alterations of the brain, the cause which sometimes suffers sensibility to be intact, and sometimes occasions its more or less complete abolition." *

If we pass on to the consideration of the functions of other important parts of the brain, as illustrated by the symptoms of injury or disease occurring in them, we find M. Longet stating, that in lesions of the tuber annulare convulsive contractions precede, in general, paralysis of the limbs, and that the patients always die suffocated. "The presence of the anterior columns of the cords in the tuber," he proceeds to say, "explains the convulsions; the extension of the lesion to the first motor bulb of the respiratory mechanism, and the compression of this organ, account for the death by asphyxia. Paralysis affects all four limbs when the mischief involves both halves of the tuber; but where one side of this body only is implicated, there is always hemiplegia of the opposite side of the person."

Sudden effusion of blood, or other injury destroying the structure of the medulla oblongata, causes death at once, by arresting the function of respiration. When the mischief has come on more gradually or been less complete, as in a case cited by M. Longet of an aneurismal tumour, of the size of a hen's egg, indenting its anterior face and more or less destroying its substance, changing the positions of the pyramidal and olivary bodies, and compressing the hypoglossal, glosso-pharyngeal, and pneumo-gastric nerves, we may have various combinations of the symptoms which were therein observed. In this patient the power of movement was greatly impaired both in the legs and arms, the voice was almost lost, the articulation of words slow and difficult, the breathing laborious, and deglutition much embarrassed; while towards the close, with an increase of all these symptoms, there were in-

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* Solly on the Brain, 1847, pp. 508, 509.

voluntary discharges both of the urine and stools; yet the senses, the intellectual faculties, and the general sensibility, remained uninjured.

Distinct forms of paralysis have been described under the titles of hemiplegia, partial paralysis, and paraplegia, and we might add a fourth variety of local paralysis, which differs from the rest in being due not to the injury of the nerves at a greater or less distance from the part affected, but to that of the structure of the part itself. Of this kind are those instances of paralysis of the coats of the bladder, which follow repeated and extreme distention of that organ. Under the same head may be ranged some instances of paralysis from poisons, as more especially that from lead, in which we believe it to be a direct action on the muscles of the fore arm which gives rise to the result. In like manner, also, there are instances of amaurosis in which the delicate structure of the retina has been pressed upon by its vascular and serous membrane, the choroid, and membrana Jacobi, thickening by morbid deposit. And these appear to us distinct in their nature from ordinary instances of paralysis. A certain amount of stiffness or inaptitude for motion is not uncommonly observed to follow the pains of muscular rheumatism, which should be ranged under the same head; and a local paralysis has sometimes been clearly a consequence of the direct operation of cold.

Of all the forms of paralysis, hemiplegia is the most common, and it is that which is most commonly associated with apoplexy, either following or preceding it; yet it often occurs without any loss of consciousness, either at the time of its supervention or afterwards. The muscles of the face, as well as those of the limbs, are generally affected, in consequence of the third branch of the fifth pair of nerves being implicated, and the face suffers on the same side as the body, a fact explained by Sir C. Bell's discovery that the origin of the fifth nerve was below the decussation of the anterior columns; so that in the face, as well as in the body, the paralysis is on the side opposite that of the mischief in the brain. The paralysis may be complete or incomplete, perfect or imperfect, or these characters may be variously combined. It is to be observed, however, that in these cases the movements of the eyelids and eye are unaffected, — it is the cheek and angle of the mouth which are seen to be motionless or somewhat drawn to the opposite side when the patient speaks or smiles; one side of the tongue, too, is engaged, so that when protruded its point is turned towards the affected side. M. Andral lays it down as a law, that in this form of the disease the improvement of the leg always outruns that of the arm: hence it is common to observe the paralysis much more complete in the latter than in the former limb, whether the progress towards a cure have taken place as a consequence of treatment or of the efforts of nature; it is not uncommon for the arm to suffer more severely from the first.

If the proximate causes of hemiplegia be sought for, we believe that they will be found to be the same, which, operating more extensively, are wont to give rise to apoplexy. Thus, the effusion of blood destroying the integrity of any of the parts above indicated, or the occurrence of softening or tumours in them, whether aneurismal or otherwise, or any circumstance which shall give rise to pressure upon them, may be determining causes of hemiplegia. Hence the mischiefs of which hemiplegia is symptomatic are by no means limited either in their nature or seat. Effusion of blood on the surface of the brain, or the deposition of pus as a consequence of inflammation of its membranes, may give rise to paralysis by pressure upon parts whose injury is adequate to the production of that result. The original seat of the mischief is by no means necessarily confined to the parts or to the immediate vicinity of the parts, numerous though they be, whose impaired functions may produce the symptoms of hemiplegia. Among the most frequent of the sources of this malady are no doubt effusion of blood in the thalamus or corpus striatum; but the same effusion taking place on the surface of the brain, or elsewhere, may by its pressure determine the same consequence, so that the exact seat of the mischief is by no means of easy determination. But in reference to treatment, it is of more importance to understand the probable nature than the exact seat of the lesion; and we do not hesitate to say, that this is wont to be of a congestive or inflammatory character, rather than of the opposite kind. True it is, that conditions directly opposed to each other are capable of inducing the same or almost the same external symptoms; and that the instances are not a few in which an arrest of circulation on one side of the brain has given rise to the malady of which we are speaking. Thus, there is no doubt that in some instances where a ligature has been placed upon the carotid artery, hemiplegia on the opposite side has followed the operation, and Dr. Todd has published an interesting and very instructive case, in which an aneurism, so situated as to diminish the supply of blood in the carotid and vertebral arteries of the same side, was followed by hemiplegia on the opposite side of the body. The conditions necessary for this consequence are well stated in his own words, as published at page 322. of the 27th vol. of the "Medico-Chirurgical Transactions:" — "When the circulation is obstructed in the internal carotid artery, the chief source of supply to the brain on the same side is from the vertebral artery. That this collateral circulation is amply sufficient to prevent any injurious consequences upon the functions of the brain is abundantly proved by many recorded cases of spontaneous or artificial obstruction of the common carotid artery. How is it that it was insufficient in this case? This question may be satisfactorily answered by referring to the narrowed dimensions of the innominata and right subclavian arteries, and the consequent imperfect supply of the right vertebral." This diminution in the amount of the circulating fluid had produced paleness, and rather extensive softening in patches on the right side of the brain, to which the hemiplegia of the left limbs was referred.

On the subject of softening of the brain we have the following observation from the pen of Mr. Solly: — "We are warranted," he says, "in concluding that the appearance called ramollissement is usually the result of acute inflammatory action, but that in old people it frequently follows a total failure of the circulation, corresponding, both in its consequence and in the cause producing it, to asthenic senile gangrene in other parts; and also that it may be the consequence of local and general anæmia, even in young subjects."

The researches of modern pathologists appear to show, that non-inflammatory softening may be discovered in the brain unpreceded by any symptoms of paralysis, the inference being that in these instances it has not existed during the life of the patient, but has arisen subsequently to death, either as a consequence of putrefaction alone, or of this process aided by the maceration of the part in the serous fluid with which it was in contact.

Or again, as we have shown above, it may originate during life in defective nutrition of the brain, whether due to some distant source of obstruction in the blood vessels, or to changes occurring in the arterial coats within the head. The term "white softening" has been applied to these varieties, but it seems doubtful whether the colour can be constantly taken as a criterion of the nature of the change. The substance of the brain may be softened around a clot of effused blood, and may be more or less changed in colour, and yet be non-inflammatory, while the inflammatory softening may occur in parts which retain their paleness.

A third variety of softening is that dependent on inflammation, which is only distinguished from the others by the presence of exudation corpuscles and granules, which are absent in non-inflammatory softening. But as these bodies are not discoverable by the naked eye, it is only by means of the microscope that the character of the softening can be ascertained. Further it is maintained by Dr. Bennett, that inflammation in the nervous centres has in several instances been demonstrated by means of the microscope, after it had escaped the observation of good morbid anatomists, and been indicated by the most unequivocal symptoms. Other conclusions drawn by Dr. Bennett from his very interesting and instructive papers published in the 58th, 59th, and 60th volumes of the "Edinburgh Medical and Surgical Journal" will be found at page 398 of the last named volume; and some of these we extract here.

Thus he writes with regard to the non-inflammatory softening, that when unaccompanied by hæmorrhage it is usually post mortem, and causes no symptoms. He had before remarked at page 385, "that non-inflammatory softening would seem to arise from four causes; viz. 1st. From mechanical violence in exposing the nervous centres. 2dly. From a mechanical breaking up of the nervous tissue, by hæmorrhagic extravasations, whether in mass or when infiltrated in small isolated points constituting capillary apoplexy. 3dly. From the mere imbibition of effused serum, which loosens the connection between the nervous tubes, and diminishes the consistence of the nervous tissue. 4th. From the process of putrefaction."

In reference to the colour of the softenings we find among the conclusions "That every different coloured softening has at various times been found to be connected with inflammation, but that yellow and white softenings are most frequently non-inflammatory, whilst the fawn coloured is commonly inflammatory; that red softenings usually depend on congestion, or the direct extravasation of blood; yellow softenings on the imbibition of the colouring matter of the blood, fawn and grey-coloured softenings on the presence of brown exudation corpuscles; and white softenings in the great majority of cases are post mortem, and the result of maceration in serum." Andral, however, says in his lectures that out of between two hundred and three hundred recorded cases of all sorts of softening, there were only six or seven in which it was not indicated by symptoms during life.

Dr. Todd too is so far from acquiescing in the belief of these softenings being constantly post mortem productions or of their giving rise to no symptoms when occurring during life, that in his paper on the Irritability of Paralysed Limbs published in the 30th volume of the Medico-Chirurgical Transactions, he adduces six examples of paralysis which he expressly refers to white (by which we understand non-inflammatory) softening of the brain. And these six cases form part of a class of thirteen, having the common property of diminished susceptibility to the galvanic stimulus, of which others therefore were probably due to the same morbid lesion as the six.

The fact of arrest of circulation being adequate to the production of paralysis seems established as well by the results of experiments on animals as by that of operation or disease in man. Thus in no less than eight instances recorded in Mr. G. Robinson's paper in the 26th volume of the Medico-Chirurgical Transactions in which a ligature was applied on the descending aorta, with the totally different object of ascertaining the effect thus produced on the urinary secretion, immediate and permanent paraplegia was produced. So constant indeed was this result, that in detailing the later experiments the author remarks that the ordinary, or usual paraplegia was present. It is important, but by no means easy to distinguish during life the particular lesions upon which the hemiplegia may depend; and we shall presently point out some symptoms which are said to accompany the paralysis from inflammatory softening. We confess that we are acquainted with no very certain means of diagnosis between that from effusion of blood, and that from non-inflammatory softening. In these cases, however, some guidance will be afforded by the aspect, age, and general condition of the patient.

We may assume that in those cases of hemiplegia or partial paralysis which yield speedily to the abstraction of blood and other antiphlogistic means, no other mischief beyond some temporary disturbance of the circulation has taken place. We here speak of such attacks as are followed by complete recovery in the course of a few hours, or even a day or two, periods too brief to allow of absorption of blood. In the majority of instances of paralysis supervening suddenly and persisting with greater or less obstinacy, the probability is that the mischief is caused by effused blood: and the processes by which, after the absorption of the serum, the clot is sometimes separated by a membrane from the portion of brain in which it is embedded, and subsequently partially or entirely removed, tend to diminish the mischiefs arising from its presence, and to facilitate the restoration of the healthy functions of the brain.

Early rigidity of paralytic muscles according to Dr. Todd is evidence of irritative disease within the cranium; late rigidity following complete resolution of the muscles indicates that there has been loss of substance in the brain, and that the cicatrix is undergoing contraction. Rapidity of pulse, inquietude of mind, and depression of spirits we have been wont to consider very unfavourable symptoms if persisting after the disease has lasted some time, believing them to indicate some active mischief likely to be followed by renewed attacks either of paralysis or apoplexy. The non-wasting of the paralytic limb indicates a less complete extinction of nervous energy, perhaps some degree of erethism in the midst of paralysis, than where a contrary result obtains. We can only assert of this state of irritation that it may sometimes depend on inflammation. We must confess ourselves somewhat incredulous as to the common occurrence of non-inflammatory softening of the brain; Dr. Todd appears to take an anæmic or enfeebled condition of the patient suffering a paralytic attack not preceded by premonitory symptoms, and unaccompanied with any of those symptoms of irritation which we have pointed out, as justifying the diagnosis of white softening. This, however, is a conclusion subject to much doubt, and we must remark that in the cases to which we have before referred, there was no verification of his opinion by dissection. It will be seen from what has preceded that there is a want of agreement among those who have studied this matter. If we allow that diseased arteries of the brain may sometimes produce the so-called asthenic senile gangrene o Mr. Solly, we believe that they much more frequently give rise to the effusion of blood; while it is difficult to see how any genera anæmic or enfeebled condition should occasion so partial a change in the nutrition of the brain as to manifest itself in the phenomena of hemiplegia.

The symptoms of paralysis are so distinct that the diagnosis o the disease is easily made, but it is of importance to distinguish the hysterical from other forms of this malady. And this may generally be done by a careful inquiry into the previous history o the patient, and ascertaining whether or not she has presented other indications of this Protean disease, and whether or not she be the subject of dysmenorrhœa or other derangements of the uterine functions. It is moreover to be observed, as mentioned by Dr. Todd, that the face is rarely or never affected in this complaint; the patient besides, as noted by the same physician, is wont to drag the leg in walking and not to bring round the foot in a more or less circular direction, a peculiarity of gait which he considers diagnostic. The ordinary remedies of hysteria, as we have stated under that head, are appropriate to all the forms of paralysis which appear in it. We lately cured a young woman suffering under this form of hemiplegia by the exhibition of cubeb pepper thrice a day in half-drachm doses. The treatment is generally successful in the end, though the complaint may be obstinate. The recovery is often sudden.

Cases have sometimes occurred to us in which with some degree of pain affecting the arm and leg on one side, there is also more or less inability to use the affected limbs; and it requires some care to ascertain whether this inability be dependent on inherent weakness, or an increase of suffering on moving them. The result of our inquiries has in some instances convinced us of the existence of an incomplete hemiplegia where rheumatism only might at first sight have been suspected. The premonitory symptoms and exciting causes of hemiplegia are the same as those of apoplexy, and will be found detailed under that head.

When this disease arises in a young person of a full plethoric habit, comes on suddenly, the head being much affected, or seems to arise from the causes producing apoplexy, it will be advisable to take away some blood, by opening the jugular vein or temporal artery; but in the generality of cases the evacuation of blood by the application of cupping-glasses to the nape of the neck will be the preferable way of relieving any marked determination to the head. The next proper step to be taken will be to give an active purgative, as advised under the head of Apoplexy. The propriety of abstracting blood by cupping from the nape of the neck, or by leeches applied behind the ears, must be determined rather by the presence of symptoms of local congestion, as headach, giddiness, ringing in the ears, general drowsiness, or by debility instead of refreshment as a consequence of sound sleep, rather than by any circumstances connected with the age or aspect of the patient, or the duration of the disease. General bloodletting is rarely or never advisable in the case of those advanced in years, or debilitated in constitution, since this remedy is only demanded or justified by the presence of general plethora. It is not indicated unless there be actual plethora, even in cases where hypertrophy of the heart is manifestly present; because, as clearly explained by Dr. Watson, the apoplexy or paralysis is not wont to arise from any increased momentum which the hypertrophied heart communicates to the blood, but from congestion of the venous system dependent upon some obstruction in the course of the circulation of which the hypertrophy itself is a consequence, and only an incomplete corrective. General bloodletting then is to be excluded unless there be more or less of general plethora, but cautious local bloodletting whenever there are symptoms of local congestion will in our view be generally advantageous. And we justify this opinion on the simple ground that the abstraction of from six to eight ounces of blood in the manner just spoken of, may do much to relieve the local congestion, while it can detract little from the constitutional strength. Uninfluenced by the now fashionable fear of debility we have during the last twelve years at first occasionally bled, and latterly leeched a lady at present in her eighty-ninth year, who, so long ago, suffered from a distinct attack of paralysis of short duration, with the result that she has since had no return, and is, considering her age, still active and healthy. If there be any doubt, it will always be safe to apply four or six leeches behind the ears in the first instance, and to be guided in the repetition of them after two or three days by the result obtained, should there still be sufficient indications for their employment.

If we are little deterred from the use of local blood-letting by age or apparent weakness, where the symptoms appear to require or to justify a resort to it, still less are we restrained from active purgation. Now we employ cathartics not merely for the purpose of unloading the bowels, not with the view of debilitating, since blood-letting and abstinence are better means when such is our object, but for the purpose of producing derivation from the head. We, at the same time, have the secondary but not unimportant advantages of much relieving any congestions existing in the liver and lungs, of promoting the functions of the kidneys, of diminishing the mass, without impoverishing the quality, of the blood; and through some or all of these agencies, of attacking more directly the cause of the mischief in the brain than by any other remedial measures. This, at least, is the conviction to which we have been led by a not very limited experience. But to produce the utmost benefit which may be hoped from them purgatives must be such as act powerfully, it may be even distressingly, at the time upon the patient; and must be the stronger, because there is in such cases an increased resistanee to their action. Croton oil is amongst the best cathartics; and one minim of this, with two grains of calomel, and one of aromatic powder, may be made into a pill and given on alternate mornings, or every third morning, as long as it is requisite and appears beneficial. This will be the dose for a vigorous adult; while, with feebler subjects, we may begin with half this dose, or with other less powerful cathartics; but what we insist on is, that greater benefit is derived from the less frequent use of a drastic purgative, than from the more continuous employment of a milder one. It is just two years since we attended a lady, about forty years of age, who was pallid and anæmic, and at the time a nurse, and had been suddenly seized with complete and perfect hemiplegia of the left side. The pulse was less frequent than in health, was feeble, unequal, and occasionally intermitting, and the nights restless. After other purgatives had been tried, a drop of croton oil was ordered for her on alternate mornings; and it was remarked that on the evenings of those days the pulse became more natural both in frequency and power, and that refreshing sleep was procured. An alteration was made in the treatment by a celebrated physician called in consultation, who suggested that half a drop of the oil should be given every morning; but the good effects upon the pulse and rest were not then equally noticeable. Calomel and scammony, or calomel and jalap, or cathartic extract, are other forms which may be used instead of the croton oil, which may be tried prior to it, or take its place if necessary. Saline aperients have appeared to us less efficacious, and enemata only useful as adjuvants. When strong purgation has been fairly tried for a time, and has either failed or done all that can be hoped for from it, it will be enough merely to keep the bowels gently open by milder medicines. We have now under our care a man who when he first came to us had amaurosis of six months' standing, which came on suddenly after a fit, was complete in the right eye, but not quite complete in the left, while both pupils were extremely dilated and insensible to light. In this case, under the use of strong purgatives, some vision has been gained for the right eye, while the pupils have resumed their natural contractility.

The other treatment of the hemiplegia must depend upon the constitutional state of the patient. While the attack is recent, mild antiphlogistic treatment will be appropriate; a saline draught with a small dose, as a twelth or sixteenth of a grain, of tartar emetic being given thrice a day; and a low dietary enforced, till symptoms of cerebral congestion and constitutional excitement have been removed. But if, with local congestion, there be general debility, as evidenced by a pallid or anæmic condition, by a relaxed state of the skin, or by other trustworthy evidences of weakness (amongst which the sensations of the patient and the character of the pulse are not always to be admitted), a nutritious but unstimulating diet and tonic medicines should accompany the other means; while blisters to the nape of the neck, at the same time, are serviceable. As tonics, the infusions of calumba, of cascarilla, of quassia, hop or gentian, either of the pharmacopœial strength or at first somewhat diluted, may be given; or, in cachectic habits, the compound decoction of sarsaparilla, with half a drachm of the extract sweetened with syrup of orange peel, may be taken thrice a day. The iodide of potassium too in three-grain doses, either in camphor mixture or in any of the above tonics, is at times beneficial. The specific action of mercury is relied upon by some for promoting absorption and restoring the healthy condition of the brain, but we place less reliance upon it than on the measures just suggested. When paralysis continues after all other indications of cerebral disturbance have been relieved, reliance has sometimes been placed on corrosive sublimate, one grain of this being dissolved in two ounces of tincture of bark, and a teaspoonful or drachm of this taken twice or thrice a day. Of the benefits to be derived from this remedy we cannot speak from our own experience.

The extract of nux vomica, and its active principle strychnia, are medicines which have been exhibited in paralysis, and we have had some experience of the use of the former, the result being that we have never known it to be serviceable, and believe it not always to be safe. Drs. Copland and Watson agree in condemning the use of this class of remedies in diseases of the kind under discussion.

Galvanism too has been tried, and is known to possess the power of preventing the wasting of the muscles of the affected limbs, or even of restoring their nutrition to them. An interrupted feeble current should be passed frequently but not too continuously through the nerves, the object being to stimulate, not to exhaust. Thus the trough may be used thrice a day for ten or fifteen minutes on each occasion. This agent, it will be seen, applies itself to remove not the primary but the secondary effects of ordinary paralysis, and is useful we believe chiefly where the paralysis is of the kind which we have called local, as where it results from cold or poison acting only on the muscles or nerves themselves; hence its use in the paralysis from lead, perhaps also in some cases of facial palsy. Over the primary lesion of the brain or spinal marrow we conceive it to have no power, and in such cases it can only be useful on the not improbable supposition that there may be instances in which the great nervous centres, after slowly regaining their functions of originating motion, may yet be inoperative on the affected limbs on account of the secondary changes which their muscles have undergone. Andral has shown in his Clinical Medicine that the restoration of the power of the limbs is not always proportioned to the progress made in the removal of the clot; a fact suggesting the possible efficacy of galvanism in some cases.

Lesions of the brain of the same kind as those which are wont to produce hemiplegia, whether they be effused blood, or softening, or tumor, may give rise to a portion only of the phenomena which we witness in that form of disease. Thus we may have the cheek and angle of the mouth and the muscles of mastication affected together with the arm, or the arm or leg alone paralysed, or the malady confined to a single finger; and yet the mischief may have its seat within the brain and require the treatment of hemiplegia or other form of cerebral paralysis. Paralysis of the leg, however, when occurring alone, is more likely to be of the nature of paraplegia depending on disease within the spine, than of that of hemiplegia due to disturbance of the brain.

Dr. M. Hall has suggested an ingenious method for distinguishing in many cases cerebral paralysis, by which he means any disease which severs the influence of the cerebrum, and consequently the acts of volition, from the paralysed limbs, from spinal paralysis which severs the influence of the spinal marrow from those limbs. His position is that in cases of cerebral paralysis the irritability of the muscular fibre is greater in the paralytic than in the unaffected part or limb. But that in cases of paralysis in which the influence of the spinal marrow *also* is interrupted, the reverse of this obtains. Lastly, he maintains that the galvanic battery or trough of Cruikshank cautiously employed is a fair test of the irritability of the muscular fibre, and consequently diagnostic of these two kinds of paralysis. He cautions us however that it is only after a certain lapse of time from the seizure that the application of this test is proper or perhaps safe; while at all times the galvanic force should be the mildest which can produce an obvious effect. For the details of the manner and other precautions necessary in employing this test we refer to the author's last paper in the 31st vol. of the Medico-Chirurgical Transactions. By this test he was enabled to recognise as cerebral a case having at first the aspect of facial paralysis; while in another where a leg alone was affected he was thus enabled to refer the malady to partial hemiplegia, rather than to paraplegia, to the class cerebral rather than to that of spinal paralysis.

A curvature of the spine, owing to one or more of the vertebræ being displaced, sometimes induces paralytic affections of the lower extremities, from the pressure that they make upon the nerves of those parts; and that sometimes the disease appears to arise solely from a thickening of the ligaments that connect the vertebræ together, without any particular affection of the bones. When one of the vertebræ only is diseased, it is observed that the patient is more completely deprived of the power of his limbs than when two or more of them are displaced, owing, as Mr. Bell thinks, to the angle being more acute, and consequently the pressure on the medulla spinalis greater, when one bone only is thrown out of the range. This also accounts for the paralytic symptoms in some being less remarkable in the more advanced stages of the disease than they were at first; for although one bone only is displaced at first, yet one or both of the contiguous vertebræ almost constantly yield at last; and the difference arising from this is so great, that patients almost always linger and die in the course of a year or two, often in a less time, when one bone alone is deranged; while they live for a great length of time, frequently as long as if no such circumstance had occurred, when the curvature of the spine becomes more extended.

Paralytic affections from distortions of the spinal column occur in all ages; but more frequently about puberty than at any other period, and more commonly in girls than in boys. In general the effects that result from them are observed before the cause is suspected; for there is seldom much pain in the part immediately affected. When distortion of the spine occurs during infancy, the patient appears to be suddenly deprived of the use of his limbs;

but at more advanced periods, he complains first of feebleness and languor, and of numbness or want of feeling in the lower extremities. By degrees, this want of sensibility is found to increase, and he is often observed to stumble, and to drag his legs, instead of lifting them properly, nor can he stand erect for any length of time without much difficulty. At last he loses the use of his legs entirely, which become altogether paralytic; and when the spine is distorted much forward, so as to compress the thoracic and abdominal viscera, he becomes distressed with dyspnœa, or with complaints in the stomach and bowels, according to the part of the spine that is diseased.

Paralytic affections of the lower extremities, or paraplegia ensuing from any injury done to the spinal marrow, by blows and other accidents, usually prove incurable. Palsy, although a dangerous disease in every instance, particularly at an advanced period of life, is sometimes removed, while a feeling of warmth, or a slight pricking pain, as if of stinging by ants in the parts affected, mark the returning sensation and motion.

The usual progress of the disease is characterised by a slow but gradual and imperfect amendment, during some months, until the patient, with some support, is able to go about, dragging along the paralytic limb.

In this helpless state he perhaps remains for some years, suffering occasionally from giddiness or pains in the head; but he sinks at last, either from an attack of apoplexy or some other disease. In a severer form of the affection the patient never makes any advance towards a recovery; he is confined to his chamber or bed, and at length gradually falls into a lethargic or comatose state, in which he dies.

In most cases, but particularly where the disease has arisen in aged or decrepit persons, the external application of stimulants will be highly proper; wherefore a blister may be applied either to the neck or to the shaved scalp, and the parts affected, as well as all along the spine, be rubbed several times a-day with flannels, or a flesh-brush impregnated with flour or essence of mustard, or else with the palm of the hand, and some kind of rubefacient liniment*; and, in addition to these remedies, we may recommend

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* ℞ Ol. Olivæ, f. ℥ij. — Terebinth, f. ℥j. M. Ft. linimentum.	* Take Olive Oil, two ounces. Oil of Turpentine, one ounce. Mix them for a liniment.
Vel,	*Or,*
℞ Spirit. Camphoræ, f. ℥j. Tinct. Cantharid. f. ʒij. Liquor. Ammon. Subcarb. f. ℥ss. M.	Take Camphorated Spirit, one ounce. Tincture of Cantharides, two drachms. Solution of Carbonate of Ammonia, half an ounce. Mix them.
Vel,	*Or,*
℞ Liniment. Ammon. Subcarbonat. f. ʒxij. Ol. Terebinth. f. ʒiij. M. Ft. linimentum.	Take Liniment of the Subcarbonate of Ammonia, twelve drachms. Oil of Turpentine, three drachms. Mix them.

the application of sinapisms * to the palms of the hands and soles of the feet.

Warm bathing is a remedy which has been much employed in most cases of chronic palsy as an external stimulant. Whether the natural baths, such as those of Bath, in Somersetshire, &c., possess more efficacious qualities than the ordinary warm ones, seems a matter of doubt with many practitioners, as the substances with which the former are impregnated are but trifling in point of quantity.

The late Dr. Heberden thought these waters were neither in any way detrimental, nor of the least use in palsy. Bath has indeed been, for a great length of time, a favourite place of resort for the paralytic, whether made so by debauchery or any other cause of premature decay; but it is highly probable the fashionable springs of that crowded mart of health do not possess the power of restoring lost energies, or bringing back the tide of ebbing animation.† When the Bath waters are used in palsy, they may be employed both in the form of bathing and pumping every other day, avoiding the latter on the head.

Occasionally in cases of long standing and very adynamic character we should use stimulants internally as well as externally. These in most general use are mustard-seed, horse-radish, garlic, and volatile alkaline salts, or spirits, and æther, which may be taken agreeably to the prescriptions advised here. †

Vel,	*Or,*
℞ Liniment. Camph. Comp. f. ℥j.	Take Compound Camphor Liniment, one ounce.
Tinct. Cantharid. f. ʒij. M.	Tincture of Cantharides, two drachms. Mix them.
* ℞ Semin. Sinap. Pulv.	* Take Mustard Seed, in Powder,
Rad. Armoraciæ Contus. āā ℥j.	Horseradish, bruised, of each an ounce.
Micæ Panis, aut Farin. Sem. Lin. ℥ij.	Crumb of Bread, or Linseed Meal, two ounces.
Acidi Acetic. Dilut. q. s. M. Ft. cataplasma, plantis pedum applicandum.	Diluted Acetic Acid, a sufficiency to form a cataplasm, which is to be applied to the soles of the feet.
† ℞ Sem. Sinap. Alb. ℥j. Capiat æger cochl. min. ij. ex Aq. Frigid. cyatho bis terve in die.	† Take White Mustard Seed, two tea-spoonfuls twice or thrice a-day, washing them down with a little cold water.
Vel,	*Or,*
℞ Sem. Sinap. Alb. Contus.	Take of Bruised Mustard Seed,
Rad. Armoraciæ, āā ℥ij.	Horseradish Root, of each two ounces.
Cort. Aurant. ℥ss.	Orange Peel, bruised, half an ounce.
Aq. Fontan. Oij. Coque ad Oj. Col. Fiat Decoctum, cujus sumat cyath. j. amplum ter in die. Adde, pro re natâ	Pure Water, two pints. Boil them slowly until reduced to one pint, then strain off the liquor, and let the patient take a wine glass full three times a day, adding occasionally
Tinct. Valerian. Ammon. ♏xxx.	Ammoniated Tincture of Valerian, thirty drops.

The arnica montana (leopard's bane) is a remedy much recommended*, and great advantages have been derived from it in paralytic and other affections depending upon a want of nervous energy.

The nux vomica is a medicine which has lately been given with benefit, it is said, in some cases of palsy. It will be best to begin with two grains, night and morning, in powder, combined with about ten grains of compound tragacanth, and to increase the dose every other day by an additional half grain, till it amounts to seven grains. (See p. 550.)

In the shaking palsy the muscles of one or more of the limbs

Vel, ℞ Spirit. Ammon. Aromat. f. ℥j. Sumat ♏xv.—xxx. pro dos. ter in die.	*Or,* Take Aromatic Ammoniated Spirit, one ounce. Of this, from fifteen to thirty drops may be given for a dose thrice a-day.
Vel, ℞ Spirit. Lav. Comp. f. ʒij. Spirit. Ammon. Fœtid. ℥ss. M. Capiat ♏xxiv.—l. in quovis vehiculo appropriato.	*Or,* Take Compound Spirit of Lavender, two drachms. Fœtid Spirits of Ammonia, half an ounce. Mix them, and take from twenty-four to fifty drops occasionally, in any suitable vehicle.
Vel, ℞ Spirit. Armoraciæ Compos. f. ʒij. ——— Ammon. Fœtid. ♏xxiv. Tinct. Valerian. f. ʒij. Aq. Anethi, f. ℥j. M. Ft. haustus, ter in die sumendus.	*Or,* Take Compound Spirit of Horseradish, two drachms. Fœtid Spirit of Ammonia, twenty-four drops. Tincture of Valerian, two drachms. Dill-Seed Water, one ounce. Mix them for a draught, to be taken three times a-day.
Vel, ℞ Ammon. Subcarbon gr. vj. Tinct. Cardam. Comp. f. ʒij. Aq. Menth. Virid. f. ℥jss. M. Ft. Haustus, 6tis horis capiendus.	*Or,* Take Subcarbonate of Ammonia, six grains. Compound Tincture of Cardamoms, two drachms. Mint Water, one ounce and a half. Mix them, and let this draught be taken every six hours.
Vel, ℞ Spirit. Ammon. Aromat. f. ʒss. Aq. Pimentæ, f. ʒx. Tinct. Cinnam. C. f. ʒij. M. Ft. haustus, sextis horis adhibendus.	*Or,* Take Aromatic Ammoniated Spirit, half a drachm. Pimento Water, ten drachms. Compound Tincture of Cinnamon, two drachms. Make these into a draught, to be taken as frequently as the former.
* ℞ Flor. Arnicæ Mont. ʒij.—ʒiij. Aq. Bullient. f. ℥x. Macera per horam in vase clauso, et cola. ℞ Colati Liquoris, f. ʒx. Tinct. Card. C. f. ʒij. Syrup. Zingib. f. ʒj. M. Ft. haustus, ter in die sumendus.	* Take Flowers of Leopard's Bane, two or three drachms. Boiling water, ten ounces. Let them infuse for an hour in a covered vessel, then strain off the liquor. Take of the Strained Liquor, ten drachms. Compound Tincture of Cardamoms, two drachms. Syrup of Ginger, one drachm. Mix them, and let this draught be taken thrice a-day.

are in a state of continual tremor, and this by degrees and time extends to both legs, whereby the patient walks with difficulty. Articulation at length becomes indistinct, mastication troublesome, the saliva dribbles from the mouth, and the body is bent forward. The complaint frequently lasts for some years without impairing the mental faculties, and is a condition of the nervous system peculiar to persons far advanced in life. As the muscular weakness increases, the agitation of the body becomes more violent, continuing even during sleep, and at length drowsiness, delirium, and marks of exhaustion, precede death.

The pathology of shaking palsy, according to Dr. Copland, is even in the present day entirely unknown, a confession which might very truthfully be made regarding many other nervous affections; as chorea, epilepsy, tetanus and hydrophobia, which nevertheless supply clinical lecturers with rich streams of explanatory verbiage concerning their nature and origin.

Paralysis agitans may arise either spontaneously, or as a consequence of lengthened exposure to certain metallic poisons, as more especially to the exhalations of mercury, constituting the tremor mercurialis. The identity of the two diseases may, however, justly be doubted. In the metallic affection cessation from exposure to the exciting cause is a condition precedent to all chance of improvement. The treatment in all cases must be allowed to be most unsuccessful and unsatisfactory, but that by sulphate of zinc, by sulphur long persevered in while the bowels are gently regulated, seems to have the most suffrages in its favour.

In every species of palsy the diet should be light, nutritive, and of a warm, aromatic nature. If the patient is able to walk, he should take such daily exercise as his strength will admit; but if deprived of the use of his legs, he ought then to be carried abroad in a carriage, or on horseback; and frictions, with strong stimulants, should frequently be applied to the parts affected. Flannel should be worn next to the skin; and all exposures to cold, damp, and moist air, ought carefully to be avoided. If possible, a warmer climate should be resorted to.

In those cases where the appetite fails, and the person sinks into a state of debility from the long continuance of the disease, it will be proper to employ the bark of cinchona, sulphate of quinine, stomachic bitters, and other tonics, to strengthen the system, as advised in Dyspepsia.

The inhabitants of the East Indies are very subject to a species of palsy which is called *barbiers*, but known by the natives under that of *beriberii*, a word signifying a sheep. The disease probably has received this denomination because those who are seized with it have a tottering in the knees, and a peculiar manner of walking, exhibiting to the fancy a representation of the gait of that animal. In the Singhalese tongue beriberii signifies great weakness; and probably the term may also be applied to other complaints which have weakness for their characteristic feature.

It attacks both natives and strangers, especially during the rainy season, commencing in November and terminating in March or April, but is most violent on the Malabar coast. During this season, the land winds issue every morning about sunrise from the neighbouring mountains with remarkable coolness; and such as are tempted by the serenity of the atmosphere to sleep exposed to these winds, are often suddenly seized with the disease.

Among the chief symptoms by which it is characterised, is a lassitude over the whole body. The motion and sensation, especially of the hands and feet, are languid and depraved. Sometimes only a part of the extremities are effected, and at others the whole of them. The speech is now and then so much obstructed, that the patient can scarcely pronounce a syllable articulately.

The disease seldom proves fatal; but the cure is generally tedious, and notwithstanding a use of the most powerful medicines, is said * seldom to be effected till after the shifting of the monsoons, unless the patients are removed to the coast of Coromandel, or to any place to the eastward of the Balagat mountains, where, by change of air, they quickly recover.

The means principally employed by the native practitioners, however, are fomentations and baths made of aromatic herbs together with strong frictions. The Indians likewise adopt earth-bathing, by putting the patient into a hole dug in the ground, and covering him with sand up to his neck. This is performed in the middle of the day, and he remains there as long as he can bear the heat of the sand.

When the disease is chronical and of long standing, sudorific medicines are proper; and therefore camphor, volatile salts, and gum guaiacum, are frequently given. To obviate costiveness, aloetic purgatives must be interposed. Pure air, a nutritive diet, and due exercise, either on horseback or by walking, will be necessary to restore the action and strength of the extremities, together with warmth, and frictions with rubefacients.

ORDER II.

ADYNAMIÆ.

A DIMINUTION or defect of vital power is the character of this order.

SYNCOPE, OR FAINTING.

THIS disease consists in a decreased action, and sometimes total cessation, of the functions of the heart and respiration. It is some-

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* See Dr. Lind on the Diseases of Warm Climates, p. 286.

times preceded by anxiety about the præcordia, a sense of fulness ascending from the stomach towards the head, vertigo, or confusion of ideas, dimness of sight, and coldness of the extremities. Attacks of syncope are frequently attended with, or end in vomiting, and sometimes in convulsions, or in an epileptic fit.

The causes of this affection are, violent and long-continued exertions, long continuance in an erect position, great external heat, sudden and violent emotions of the mind, pungent and other kinds of odours, derangement of the primæ viæ, debility from preceding disorders, and excessive evacuations, defect of the stimulus of distension, as after blood-letting, hæmorrhage, or the operation of paracentesis in ascites; organic affection of the heart, or of the parts immediately connected with it, such as aneurism either of the heart itself, or of the arch of the aorta; ossification of the valves of the heart, or its large blood-vessels, or polypi.

During the paroxysm, the nostrils are to be stimulated with volatile spirits, or salts, and the face to be sprinkled with cold water. The patient should be placed in a recumbent posture, and in all cases a free admission of pure, cool air should be allowed. Where syncope is produced by a great loss of blood, it may be necessary to have recourse to powerful stimulants, such as brandy, æther, and ammonia, persevering in their use until the safety of the patient is secured. If the disease arises as the consequence of debility or defective excitement, the system should be strengthened by the use of the sulphate of quinine, cinchona, sulphuric acid, stomachic bitters, and chalybeates, together with cold bathing. — (See Dyspepsia and Intermittents.) It need hardly be added, that avoiding the occasional causes, and removing them, if in our power, is what we should always keep in view.

VERTIGO, OR GIDDINESS IN THE HEAD.

Vertigo proceeds most usually either from too great a fulness of blood in the vessels of the head, or is symptomatic of dyspepsia, hypochondriasis, hysteria, or epilepsy.

The patient is seized on a sudden with a swimming in the head; every thing appears to him to go round, he staggers, and is in danger of falling down.

This complaint is attended with no danger, when it arises as a symptom of hysteria or any other nervous disease; but when it takes place in consequence of an over-fulness of blood in the vessels of the head, and is not timely relieved by proper evacuation, it may terminate in apoplexy or palsy.

Where vertigo prevails as a symptom of some nervous disease, recourse must be had to the medicines and remedies which are most suitable to the removal of the primary affection (see Hysteria and Dyspepsia); but where it is occasioned by an over-distension of the vessels of the head, either general or topical bleeding, by the application of several leeches to the temples, or the scarificator and cupping-glasses to the nape of the neck (the latter being the most certain), together with a frequent use of cooling purgatives, and a spare regimen, ought to be employed. Should the complaint not be removed by these means, scapulary issues will be advisable.

DYSPEPSIA, OR INDIGESTION.

"INDIGESTION," writes Dr. C. J. Todd in the Article under that head in the Cyclopædia of Practical Medicine, "is synonymous with dyspepsia, and signifies interrupted, laborious, or painful digestion, or, in other words, any derangement of that function by which the aliment, after having been received into the stomach, is converted into chyle."

Now we must remark at the outset that to us this definition seems far too comprehensive, and to embrace in fact two particulars, which, though frequently coexisting, are in their nature perfectly distinct, viz. the occurrence of pain or uneasiness as an attendant or consequence of the act of digestion, and the imperfection or perversion of the function itself as shown in its products. The latter morbid condition comes more properly under the head of Mal-assimilation, and though it be granted that it is often or always more or less present wherever digestion is accompanied with pain, yet it is not equally true that the absence of pain is evidence of the healthy performance of the function of digestion. A host of diseases, as gout, diabetes, many forms of cutaneous eruption, asthma, and numerous others, must be referred to primary mal-assimilation, which it is not customary to include, or convenient to treat of under the head Dyspepsia or Indigestion. In many of these forms of disease, the symptoms of dyspepsia properly so named may be slight, or altogether absent; indeed it seems a law of the human economy that where secondary or sympathetic effects are most strongly developed in distant parts or organs, that there the suffering of the central organ primarily in fault is diminished or ceases altogether. Thus the dyspeptic symptoms which precede gout are relieved, or disappear as soon as the disease declares itself in the extremities, and the same is the case also with many chronic cutaneous affections, with some forms of headach, and with some also of palpitation of the heart. In reference to disturbances of this last organ when unaccompanied by any abnormal murmurs, we have laid it down to ourselves and suggested it to others as a rule, that they should not be pronounced to depend on any organic lesion, until the results of treatment addressed to the digestive organs have been carefully observed. It must have happened to other medical men, as it often has to ourselves, to find diseases of the heart, said to be organic, disappear entirely when combated on this simple principle.

Many distinct stages or processes make up, or contribute to the performance of, the complete act of digestion. In its passage through the mouth the more solid portion of the food is not only crushed and comminuted by the action of the teeth, but is intimately mixed with the secretions of the salivary glands. In the stomach commence those important chemical changes which are effected by the admixture of the gastric juice, while in the duodenum, the addition of the bile and pancreatic fluid impress further alterations upon the alimentary material.

Now imperfection or error in any one of these stages must necessarily involve some accompanying inconvenience, manifesting itself either by the production of pain, or by some fault in the result to be accomplished. Imperfect mastication arises from the impatience of youth, or from the haste of a mind engaged in all engrossing pursuits, or again from deficiency of the teeth in advancing years may increase the difficulty of digesting substances, which if carefully chewed might cause no disturbance in the digestive operations. It is probable that the saliva, produced as it is by glands of complex structure, and containing, though in minute quantities, organic and saline principles, must exercise some more important office than that which could be discharged by water acting as a diluent alone. We are told that during health its reaction is alkaline or neutral, while it is liable to become acid under the influence of some diseases. It is to be supposed, therefore, that changes in the constitution of this fluid may have some influence in deranging the subsequent actions of the stomach; yet in the present state of our knowledge, the part performed by it is so little understood that nothing can be asserted with precision and certainty as to the consequences of any modifications which it may undergo. It is said that a peculiar principle called ptyaline has by some chemists been obtained from the saliva, but its exact nature is undetermined; its very existence is scarcely established beyond all doubt. The saliva, says Dr. Müller in his Elements of Physiology, prepares the food mechanically for deglutition; whether it contributes in any degree to the solution of the food, and what share its components have in the production of the chemical change in the stomach, are unknown. It appears that Spallanzani and Reaumur, as well as Tiedeman and Gmelin, attributed some solvent power to it, though only a slight one, while Berzelius and Müller perceived scarcely any difference in the action of saliva and that of water upon meat. The only fact, adds this last author, favourable to the opinion that the saliva has a share in the chemical process of digestion in the stomach, is that observed by Leuchs and confirmed by Schwann, — namely, that saliva has the property of changing starch into sugar, which is interesting, inasmuch as starch is in the stomach converted into gum of starch, and gradually into sugar. In addition to this property Dr. Carpenter, in his Manual of Physiology, attributes to ptyaline when concentrated a certain solvent power for caseine, animal flesh, and other proteine compounds.

The changes impressed upon the food in the stomach seem better understood than those which it undergoes in consequence of admixture with the saliva. It appears that the gastric juice has a solvent action upon the principles submitted to its operation, but more than this, the fact of solution implies an important change in the nature of the aliment acted upon. Thus in the case of albumen, which may enter the stomach in a coagulated form, a certain change in its nature has been effected, consisting apparently in an alteration of the combined water which it contains. This at least is the opinion of Dr. Prout, who applies to this change the term of reduction; and explains his meaning thus: "What was introduced into the stomach as albumen, is still albumen in the chyme, at least chemists have so pronounced it. Yet the albumen has assumed an appearance altogether different. The albumen of the egg and of the aliment may be coagulated by heat into a firm and elastic solid. The albumen of the chyme (or chyle) is indeed coagulated by heat, but its coagulation is so imperfect and so wanting in tenacity, as to offer a striking contrast with the coagulated albumen of the egg. Now what could have happened during these changes in the stomach, but the more intimate connection or combination of the albumen with water, by which the strong albumen ovi has been reduced to the weak and delicate albumen chyli? And if this explanation be admitted with regard to albumen, it must be admitted also with regard to the other alimentary principles."

A general sketch of the processes performed in the stomach upon various aliments is thus given by Dr. Carpenter: —

"The pulpy substance which is the product of the reducing action of the gastric juice is termed chyme. Its consistence will of course vary in some degree with the relative quantity of solids and liquids ingested. In general it is greyish, semifluid and homogeneous, and possesses a slightly acid taste, but is otherwise insipid. The state in which the various alimentary principles exist in it, has not yet been accurately determined; the following, however, may be near the truth. The proteine-compounds, whether derived from animal or vegetable food, are all reduced to the condition of albumen; a part of which is dissolved, while another portion is suspended in a finely divided state. Gelatine will be dissolved or not according to its previous conditions: if it exist in a tissue from which it cannot readily be extracted, it will pass forth almost unchanged, but when ingested in a state of solution it remains so; and if it have been previously prepared for solution by boiling, its solution is completed in the stomach. The gummy matters of vegetables are dissolved when they exist in a soluble form; as in the case of pure gum, pectine and dextrine, or starch gum. Sugar is unquestionably taken up in solution, as such, in a healthy condition of the system; but it may undergo a previous change in the stomach in disordered states of the digestive process. Oily matters, whether of animal or vegetable origin, are reduced to the condition of an emulsion, being very finely divided, and their particles diffused through the chyme. Most other substances, as resins, woody fibre, horny matter, yellow fibrous tissue &c., pass unchanged from the stomach, and undergo no subsequent alteration in the intestinal canal, so that they are discharged among the fæces as completely useless."

These matters, it is to be observed, are indeed useless as far as nutrition is concerned, and yet are of service in stimulating the bowels to action, whereby effete excretions poured into the intestines are removed from the system. The agent concerned in the changes which result in the production of the chyme has long been known by the name of the gastric juice, the essential ingredients of which, besides water, are probably free hydrochloric acid, and a peculiar animal principle called pepsine. It has been shown experimentally that neither pure pepsine diffused in water, nor hydrochloric acid existing in it in minute quantity, impart separately a solvent power to the resulting liquid at all comparable to that which arises when the two coexist in an artificial mixture, or to that possessed by the natural gastric juice itself. The formation of chlorine or of hydrochloric acid, according to Dr. Prout, appears to be necessary to the reducing operation of the stomach in its healthy state; but other acids he conceives, and especially the lactic acid, are occasionally, if not always, present during the digestive processes; and his own opinion is that it is rather to be considered as the result of unnatural irritation, produced by disease, indigestible aliments &c., than as a healthy product necessary to digestion. Be this as it may, there seems no doubt but that excessive development of hydrochloric and lactic acids, and the production of the oxalic, butyric, acetic, and others, is a frequent accompaniment of indigestion. These organic acids may be derived in some instances directly from the food; in some cases, however, they, like the hydrochloric, are supposed to be formed from the blood. The follicles of the stomach are the sources of the gastric juice; and a knowledge of the conditions under which it is secreted, as remarked by Dr. Carpenter, is of great practical importance. He tells us that "it is not poured forth except when food is introduced into the stomach, or when its walls are irritated in some other mode; that it is not previously secreted and stored up in the follicles, but that the act of secretion itself is due to the stimulus applied to the mucous membrane. The quantity of fluid, he continues, then poured into the stomach is not regulated by the amount of food ingested, so much as by the wants of the system; and as only a definite quantity of food can be acted on by a given amount of gastric juice, any superfluity remains undissolved for some time, either continuing in the stomach till a fresh supply of the solvent is secreted, or passing into the intestinal canal in a crude state, and becoming a source of irritation, pain, and disease. The use of a small quantity of salt, pepper, mustard, or other stimulating substances, appear to produce a gently stimulating effect upon the mucous membrane, and causing an increased afflux of blood, to augment the quantity of the gastric fluid poured forth, any excess of these or of other irritants, however, produces a disordered condition of the mucous membrane, which is very unfavourable to the digestive process. It becomes red and dry, with an insufficient secretion of mucus; the epithelial lining is abraded, so that the mucous coat is left entirely bare, and irregular circumscribed patches of a deeper hue, sometimes with small aphthous crusts, present themselves here and there on the walls of the stomach. Similar results follow excess in eating, and the excitement of strong emotions; while those of a depressing nature seem especially to produce a pale, flaccid condition of the mucous membrane, which is equally unfavourable to the secretion of gastric fluid."

We must quote yet farther from Dr. Carpenter, on account of the practical usefulness of the conclusions at which he arrives, opposed as they are to the habits and prejudices of society at large. "That the amount of the secretion is ordinarily proportioned to the wants of the system; that the introduction of any superfluous aliment into the stomach is not only useless, but injurious, as giving rise to irritation; that incipient disorder of the stomach may occur, rendering it less fit than usual for the discharge of its important duties, without manifesting itself by the condition of the tongue; that when the tongue does indicate disorder of the stomach, such disorder is usually considerable, and that every particle of food ingested in such states as prevent the secretion of gastric fluid is a source of fresh irritation, are truths which cannot too constantly be borne in mind."

We must regard the stomach as the especial seat appointed for the digestion of the fibrinous and albuminous portions of the food. In it, and in it only, according to Matteucci, is formed that acid solution of pepsine which possesses the property of exerting the catalytic action, whereby the required changes are effected in them. This property of pepsine, according to the author just named, requires the constant presence of a free mineral or organic acid: if pepsine be dissolved in an alkaline liquid, its catalytic action becomes modified; and we shall have presently to mention that it is an alkaline fluid, containing probably some principle analogous to pepsine, furnished by the pancreas that effects the reduction of the amylaceous principles, and assists also in fitting the oily for absorption.

But the stomach is not only a vessel in which chemical changes, principally affecting the nitrogenised portions of its contents, are carried on; it is also a reservoir from which absorption is drawing off much of the material which has entered. Experiments, instituted, with the view of explaining the action of poisons, have rendered it probable that these, when absorbed from the intestinal canal, do not pass through the lacteals, but are conveyed by imbibition through the coats of the capillaries directly into the current of the blood.

There is reason to believe that many saline bodies, when dissolved, find thus for themselves a direct passage into the veins; nay, we may go further, and say that this is probably the mode in which liquids, whether simple or containing other substances in solution, enter the circulation. And thus it happens, that not only substances originally liquid, but those which have been rendered so by their residence in the stomach itself, are taken up by the vessels of that organ, and leave only amylaceous and oleaginous matters (in addition to those which are destined to become excrementitious) to undergo, in the duodenum and intestines, the influences of secretions, which differ from that of the stomach by the marked predominance of an alkaline character. Acid digestion, so to speak, goes on in the stomach, and its products are removed in the stomach; while the material to be subjected to alkaline digestion passes on through the stomach, to meet there its appropriate solvent. This appears to be the view of Matteucci, when he says, that "azotised neutral substances, dissolved in the stomach by the acid liquid, or by the catalytic action of pepsine, pass into the blood merely by the imbibition of the coats of the capillary vessels of the stomach. Water, and coloured alcoholic drinks introduced into the stomach, are also absorbed: they do not pass beyond this viscus, nor are they to be found in the chyle, yet they reach the blood." Farther on, too, he refers the reduction of starchy substances to the pancreatic juice, and observes that this action requires the presence of a free alkali. Of the mode in which absorption takes place from the alimentary canal, Dr. Carpenter gives the following description. "Although it is difficult to speak with certainty on the point, yet there appears a strong probability, that, both in the stomach and intestinal tube, the absorption of nutritive matters in a state of perfect solution — such as gum, sugar, pectine, gelatine, and soluble albumen — is accomplished through the medium of the veins, which also take up the chief supply of water that is required by the system. It is through the lacteals that nutritive matters in a state of very fine division, but not in perfect solution, are received into the system. These vessels are very copiously distributed on the walls of the small intestines, commencing near the entrance of the biliary and pancreatic ducts; while the walls of the large intestines are less abundantly supplied with them, and they are not to be met with at all on those of the stomach."

The direct transmission to the blood of substances introduced into the stomach, either in solution, or in a readily soluble form, explains the beneficial effects often produced by the administration of preparations of iron in cases where the system wants power to assimilate that which is contained in the food. It explains, too, how, where there is extreme exhaustion, weak broths and thin farinaceous solutions and diluted alcoholic drinks may cherish the spark of life, when no support would be derived from substances of a more nutritious nature, which needed digestion before they could be absorbed into the system. The chyme, upon quitting the stomach, passes into the duodenum, where it is mingled with the biliary and pancreatic secretions; and the mass, from being acid, becomes of a neutral or alkaline character. There is, besides, a more distinct separation of the fluid from the more solid parts, the latter of which are destined to pass directly out of the body, together with the secretions of the intestines which are subsequently to be mixed with them; while the former enter the lacteals in the form of chyle. Other matters, in perfect solution, which have escaped the absorbing action of the stomach, enter the capillaries during their passage through the intestines by a simple action of endosmosis, and are thus carried into the veins. It is probable that the more elaborated products of digestion, that those of an oily nature, and such as are destined for absorption without undergoing perfect solution, are taken up, or, as it were, secreted by the agency of cells into the interior of the lacteals. It seems, at all events, as well established as any general principle in physiology, that matters in perfect solution, as has been proved in the case of many poisons and saline substances, are not transmitted by these vessels. The action of the digestive organs upon such principles is, however, as yet very imperfectly made out. It is believed that many organic acids—as tartrates, malates, citrates, &c. in combination with alkaline or earthy bases—are converted into carbonates; but the same is not the case with the oxalates; neither do medicines or poisons having organic bases appear to be decomposed in the stomach or in the system, as quina, morphia, strychnia, and the like. Alcohol, too, may be introduced by imbibition without undergoing decomposition. Gelatine is not found in the blood; nor is sugar one of its ingredients in health; but we are ignorant of the law under which the reduction and conversion of these is made to precede their imbibition by the tissues. Nay, there is some uncertainty upon this very point, for it will be seen that, whereas Dr. Prout speaks of saccharine principles in common with albuminous (under which head he includes gelatine, though half inclined to associate it with the sugars) as undergoing reduction and conversion, Dr. Carpenter speaks both of sugar and gelatine as conveyed directly by imbibition into the blood. Now there is this difference to be remarked between the matters conveyed by imbibition into the venous system of the alimentary canal, as compared with those that enter the circulation through the lacteals and thoracic duct,—viz. that the former are subjected to the depurating action of the liver before they pass on to be farther modified in the lungs; while the latter reach the lungs more immediately, are then mingled with the general mass of the blood, and may be distributed to every part and organ of the body before entering the cœliac axis and vena portæ, to undergo the changes which it is the office of the liver to effect in them.

Patients afflicted with indigestion complain for the most part of pain, weight, a sense of distension or of sinking referred to the pit of the stomach, and occurring at a shorter or longer interval after taking food. It is common for this pain to shoot through to the back, so as to be felt in the spine between the shoulders, often with such severity as to make it doubtful in which of these two spots it is most distressing: and tenderness on pressure is a frequent accompaniment of the pain both in front and behind. When the pain is acute it seems generally more limited in its extent, but when less severe, it often spreads to one or both hypochondria, though we think more commonly to the left, or indeed it may be more marked in this latter spot than in the epigastrium itself. The pain of the left side, so often met with in young women, is indeed a symptom of dyspepsia. We have said of this pain that it occurs after eating, and this is very frequently, though not universally, the case. In not a few instances we have known a patient thus afflicted exclaim, that she should be happy if she could live without eating; and we have seen one only this day who said, that the longer she went without food the freer she was from uneasiness. In other cases, however, the pain is constant, or nearly so; but then it becomes aggravated after meals. Together with pain, there may be nausea or vomiting present; but this is not commonly so: the rising of water into the mouth — a symptom known as pyrosis — has appeared to ourselves a more frequent occurrence. There may, too, be eructations, and these are of a more or less acid character. Vomiting, however, is easily provoked, and at times is purposely aided or induced for the relief of pain, the sufferer stating that no ease could be obtained till the food was thrown off the stomach. Loss of appetite is by no means an invariable accompaniment of indigestion, many stating themselves to be well inclined to eat if they dared; thirst is seldom or never complained of, but heat in the throat, or heartburn, is not uncommon. The tongue exhibits no uniform condition, and does not materially deviate from a state of health: perhaps it is somewhat white or furred. In some cases of indigestion there is difficulty of breathing, the causes of which are various. Thus it may arise from the pain attending the movements of the diaphragm in those cases where there is considerable epigastric tenderness, or again from obstruction to those movements in consequence of fulness of the stomach and bowels; this dyspnœa having flatulent distension for its most frequent cause, the development of flatus occurring with a suddenness that gives intensity to the disturbance of respiration far beyond that which arises when the same amount of obstruction is of gradual production. Besides these mechanical causes of difficulty of breathing, there is that which depends upon cardiac disturbances, either sympathetically excited, or originating in a general condition of debility, of which the indigestion may be both a consequence and a cause. Apart from all these, we suspect that there may yet be another sort of difficulty of breathing recurring in paroxysms, and often accompanying more or less of flatulent distension, yet not resulting from this solely as its mechanical consequence, but being of the nature of spasmodic asthma, wherein intestinal irritation is the excitor of a reflex action declaring itself by more or less of spasm in the air tubes of the lungs. We conceive that we have recognised these several sources of dyspeptic dyspnœa, and think the distinguishing them to be interesting, if not important. A symptom which distresses and sometimes alarms the patient, and not unfrequently puzzles the practitioner, is palpitation of the abdominal aorta in the epigastrium, declaring itself, perhaps, first by uneasy internal sensations, very perceptible to a hand applied to this region, and sometimes propagated to the integuments so as to become visible to the eye. The true source of this disordered condition was first pointed out by Dr. Baillie, and appears to be wholly independent of any morbid state of the vessel itself, or of the circulating system generally. The symptoms above described are such as we have been in the habit of referring to disordered actions of the stomach and bowels; not denying that in some, perhaps in the majority of instances, the functions of other organs, as of the liver (and why not of the pancreas also), may be at fault also; but not discerning a primary hepatic disease in all the ill defined maladies which come under the popular designation of bilious complaints. The truth is, that organs associated in the performance of a single complex function, as that of digestion, are not to be separated in their derangements; they suffer as a whole, both because they have many causes of derangement in common, and because they have a reciprocal connection of function, such that diseased products of the action of one must influence those of another. Thus Dr. Prout has shown that excessive acidity developed in the stomach vitiates the secretion of the bile. "The acid contents of the stomach," thus he writes, "on reaching the duodenum, do not, as in health, become neutral, but remain more or less acid, which unnatural acidity not only produces great uneasiness in this part of the alimentary canal, but often excites derangement through its whole course. Nor is this the only result; there is every reason to believe that a portion of the acid thus developed is absorbed by the chyle, and interferes with the due completion of that important fluid. In slighter cases of a temporary character the effects pass off and all becomes right again; but in severe and protracted cases, arising from derangements of the digestive organs, connected with inveterate constitutional diseases, the case is different, and the acid and unnatural matters make their way into the abdominal veins, the blood in which vessels often becomes quite black, and in some cases acid. Now as this unnatural blood passes through the hepatic system, the functions of the liver become disordered, and the bile, if not actually rendered acid, at least loses its neutralising properties, and thus the mischief becomes perpetuated." "An extreme case," continues the author, "is here supposed for the sake of illustration, such perhaps as occurs in the remittent fevers of tropical climates only: but similar phenomena appear in an infinite variety of forms and grades, and as the results of mal-assimilation in all climates." Now if this be so, it is vain to attempt to assign the exact degree in which individual parts of the intestinal canal, as the stomach, the duodenum, the intestines, are severally disordered in particular instances, or to point out how much of the malady is due to the alimentary canals, and how much to the liver. We must rather view the malady as a whole, and not complicate the study of its general nature by multiplying distinctions, the reality of which is uncertain; while our power of recognising them in practice is still more doubtful. Dr. Copland, after enumerating some of the different states of the stomach, and of its associated viscera which may co-exist with indigestion, concludes with the remark, "that these individual affections, even in their simpler or less complicated states, will seldom be manifested by symptoms enabling the most close observer to determine with precision, which of them is the one actually present, either in a simple or predominant form, or the exact associations to which it may have given rise."

The state of the bowels in dyspepsia is very various; thus they may act with too great or with natural frequency, but the general tendency is to insufficient action. The appearances of the evacuations have not been much studied, and, so far as we know, are not calculated to convey any important information to the medical man. The occurrence of a deposit of lithates in the urine may be the passing consequence of an excess at table, or may result from habitual high living, or be connected with a gouty constitution; or, again, the abundant excretion of the lithates and purpurates may be associated with deep-seated hepatic disease. The formation of oxalate of lime (which is to be known by the detection with the microscope of its octahedral crystals in the lowest portions of urine allowed to stand at rest for some hours) is due to the absorption of oxalic acid itself taken as food, or to mal-assimilation of saccharine principles, and is often accompanied by more marked and obstinate disturbance of the heart's action than accompanies other forms of dyspepsia. The existence of phosphatic deposits in urine somewhat acid or neutral, or such as has not been voided long enough to become manifestly decomposed, is known by the appearance under the microscope of beautiful minute triangular prisms, sometimes truncated at their edges, and bevelled at their extremities. This is the most common form of the triple phosphate; and is said, when persistent, to coexist with a state of depressed nervous energy. The phosphate of lime when present occurs as an amorphous deposit. The formation of these sediments seems due, in general, not to their excretion in extraordinary quantity, so much as to the altered reaction of the urine resulting from the conversion of its urea, in part, at least, into carbonate of ammonia, and the neutralisation of the acid which generally retains the phosphates in solution.

We have spoken above of the symptoms of dyspepsia generally, and they are such as often present themselves in ever varying combination in its more common and atonic form. If it be sought to distinguish those cases where there is a more inflammatory condition of the mucous membrane from those more frequent ones in which there is only irritation,—increased susceptibility, that is, of disturbing influences,—the difference is not to be sought for in the severity of the pain, or in greater intensity of the other symptoms which have been enumerated. A more inflammatory state and a more obstinate disease may be suspected when the tongue is of a vivid red at its tip and edges, with a white and creamy mucus in its centre and near its root. This suspicion will be confirmed if there be loss of appetite, or if the appetite be capricious, with an irritability of stomach manifesting itself by a greater tendency to nausea and vomiting than in ordinary cases. Besides these symptoms we believe that in this form it will be found that the sensations produced by food, though of a less painful, are of a more depressing kind, so that a sense of sinking is generally spoken of as attendant on the process of digestion. The strength, too, is more prostrated (though there be no appearance of anæmia) than in ordinary cases; the spirits are more depressed, the temper is more irritable, and a more decided emaciation is observed. This last symptom was long ago pointed out by Dr. Abercrombie as indicative of an inflammatory condition, and we believe his observation to be correct, the loss of flesh being such as is rarely met with in dyspepsia, except where cancerous disease affects the stomach, or coexists in some part of the general system. With these symptoms there is an almost hectic general condition, a rapid pulse, and heat of skin, with occasional abundant perspirations also. In such a state of things we suspect that phosphatic deposits would often be present in the urine.

Indigestion is not a disease of infancy, childhood, and youth, so much as of a more advanced period of life. Yet some forms of it are commonly met with in young females, especially at or about the time of the establishment of the menstrual function. Otherwise it chiefly arises in persons between thirty and forty years of age, and is principally to be met with in those who devote much time to study, or who lead either a very sedentary or irregular life. A great singularity attendant on it is, that it may, and often does, continue a great length of time, without any aggravation or remission of the symptoms. The disease is a frequent attendant on chronic weakness, as also on biliary derangement.

Great grief and profound uneasiness of mind, intense study, indolence, the neglect of due exercise in the open air, profuse evacuations, excess in venery, hard drinking, particularly of spirituous liquors, irregularity of life, and late hours; too frequent a use of warm diluent liquors, and of tea, tobacco, opium, and other narcotics; immoderate repletion and over-distension of the stomach, very frequent rejection of the saliva, in consequence of smoking or chewing tobacco, or a diminution or interruption of the due secretion of it; a deficiency in the secretion of the bile, pancreatic or gastric juice, diseases of the liver and spleen, hysteria, and hypochondriasis, are the causes which usually occasion dyspepsia. Every thing which diminishes the amount of nervous influence transmitted to the stomach weakens the digestive action.

Dyspepsia is often symptomatic of organic affection of the liver or spleen, and not an idiopathic disease; of which the practitioner may be convinced by paying due attention to the colour of the alvine and renal discharges, to the pasty or doughy feel of the skin, and the dingy-pale, hepatic hue of the countenance.

Many, perhaps most, of the diseases of the digestive organs, caused by various circumstances, consist in a weakness or atony of the affected parts, accompanied by a deficiency or depravity of the fluids secreted by them, and upon the healthy qualities of which a right performance of the functions depends.

The state of the tongue is in general a pretty good criterion of a disordered state of the stomach, but it does not point out the kind and degree of that disorder. With a furred tongue, there is perceived a disagreeable taste in the morning; and the breath in many instances, notwithstanding the greatest care that can be taken, acquires an offensive smell. In consequence of continued disease, the cuticle of the tongue sometimes appears to have lost its usual colour, and to become permanently white.

In some states of depraved digestion, there is nearly a complete disrelish for food; but still the appetite is not greatly impaired, as at the stated periods of the patient's meals he can eat heartily, although without much gratification. With hard drinkers, nausea and vomiting frequently occur in the morning; and in ruined constitutions, there is an almost constant thirst, with feverishness, loss of appetite and strength, shortness of breath, paleness of the countenance, with somewhat of a yellow tinge, languor, and, towards the close, anasarcous swellings.

In complaints of the stomach, in addition to defective appetite, indigestion, flatulency in a high degree, acidity, and cardialgia, the patient is often afflicted with costiveness, vertigo, pain in the balls of the eyes, imperfect vision, and palpitations. Restlessness at night is not so much an habitual symptom as an occasional consequence of some excess or indiscretion in diet, in which case the sleep is disturbed by frightful dreams and startings, not affording much refreshment; and occasionally there is much moaning, with a sense of a heavy weight on the chest, or what has been denominated the night-mare. Occasionally the stomach suffers from spasms, owing to some error in diet, or perhaps connected with that ill-defined state of constitution called the gouty diathesis. Its attack is usually sudden, attended with great pain, and bears a formidable character.

Although dyspeptic complaints, when they exist in consequence of debility of the stomach, may be alleviated, or be entirely removed by timely desisting from bad habits, using an appropriate diet, and taking proper medicines, still, when they originate from an organic affection — such, for instance, as a scirrhus of the pylorus, or ulceration of the coats of the stomach — they will be sure to prove fatal.

It is difficult to assign the organic changes upon which dyspepsia may depend: the malady is rarely fatal, and when it is so, it is generally referrible to some complication of which it is symptomatic, and which is not essential to its existence. Thus in cases of perforating ulcer of the stomach, the fatal result has been due to a mischief limited in its extent, and the preceding symptoms have assumed no such severity as to indicate the peril which existed. Cases of cancerous degeneration of the pylorus and of other parts of the stomach are more frequent, and leave their characteristic marks after death; but these are not the sources of ordinary dyspepsia. Other deviations of the mucous membrane from a state of health — as a mamillated and a thickened condition — are spoken of by pathological writers; but their influence in the production of dyspepsia seems not well ascertained. Upon the whole it is probable, that long-continued dyspepsia may prevail without impressing on the organs of digestion any changes to be recognised by dissection after death.

In the treatment of dyspepsia, three indications must be attended to:

The first is to avoid or remove the remote causes which have been enumerated. A knowledge of the cause which has given rise to it will point out the best means of relief.

The second is to obviate the symptoms which accompany or aggravate the disease.

The third is to restore the tone of the organ, if possible.

To effect the first of these intentions, it must be the business of the physician to point out to the patient the indispensable necessity of renouncing such habits or pursuits as may have tended to give rise to the disease, as the continued application or frequent repetition of these causes may defeat the use of whatever remedies are employed.

If he leads a fashionable life, it will be necessary for him to forsake the haunts and habits of dissipation; to leave the crowded city, and its alluring amusements, conducted in rooms, where the air he breathes is vitiated and contaminated by the great number of persons collected together; to shun luxurious tables, indolence, and late hours; to retrace the footsteps by which he had deviated from simple nature, and to court the country, pure air, moderate exercise, early rising, simple diet, the society of a few select friends, and pleasing occupations.

It will be seen from what has preceded, how great an influence in the production of dyspepsia is exerted by a diet which is excessive in quantity, or difficult of assimilation from its quality. The regulation of the diet must, therefore, ever form an important part in the treatment of this disease; and though all rules must be subject to modification to meet individual cases, yet some general principles may be laid down which will be found commonly applicable. As regards the frequency of meals, it should be such as to allow occasional rest to the organs of digestion, yet not a rest of such continuance as to cause a sense of exhaustion to be followed by too full a repast. It is better that food be taken at shorter intervals and in more moderate quantities. The principal meals may for the most part be fixed according to the convenience and habits of the patient; but if many hours intervene, it will be advisable to take some light refreshment between them: a dyspeptic patient should not, we think, be in any case more than five hours, and seldom more than four hours, without taking food. It is not desirable that he go to bed fasting; but it is even worse for him to sleep upon a full and heavy meal. Hence a light supper may be taken by those who dine early; but cheese and fermented liquors, which are seldom allowable, are to be altogether interdicted at night. Admitting, as we must, that dyspepsia is a disease of debility, in as much as it consists in deficient power of the digestive organs to do properly and with ease the work that is put upon them, we maintain that it is useless, nay injurious, to commence our treatment by endeavouring directly to strengthen them either by food or medicine. Remedies, according to our view, must be directed always, in the first instance, to the relief of the pain, the removal of nausea and vomiting, and cleaning the tongue, before tonics should be ventured upon; and the diet must be so reduced in amount, and selected as to quality, that the stomach may suffer little or no pain from it. To soothe organs that have become habitually irritable must of course be often a work of time, so that painless digestion, even of the most carefully selected diet, will not be at once obtained; and it will be unnecessary to change the dietary, and to reduce it to a lower grade, because this end is not at once accomplished. It will be enough that there be a manifest and continuous tendency to this result, for then we may confidently expect to attain it by perseverance in our system; and this when attained is, according to our principles and experience, the turning point from which a more invigorating system is to commence. To soothe irritation, and thereby to relieve pain and uneasiness, and to bring the diet within the existing powers of the stomach, by limiting its quantity and choosing it of the least irritating kind, these are the objects which we propose to ourselves at the commencement of our treatment.

Now it has been perceived from the statements which we have already made, that the generation of acid in undue quantity and of an improper kind is a frequent accompaniment of indigestion, and a cause of much of the suffering entailed by it. Hence alkaline medicines are of great efficacy in removing occasional and slight attacks and abating the severity of all. This is true of alkalies,—as potash, soda, ammonia, and of the alkaline earths, lime and magnesia; and there are several considerations which induce us to prefer the latter in the form of insoluble carbonates, to their own more soluble preparations, and the more powerful ant-acids, soda and potash. Chalk and carbonate of magnesia have both this advantage, that they can be given freely without introducing an undue amount of alkali into the system: what is redundant or above the quantity required for neutralising the free acid existing in the stomach and intestines, passes out unappropriated by the system, and not only so, but soothes the parts over which it passes by absorbing acid as well as by neutralising acid secretions. Chalk certainly has, in this or some other way, a healing influence: we have often used it with benefit in inflammatory and irritable conditions of the skin, and almost always with good effect. Thus we have had it dusted over the parts affected with eczema rubrum, a disease attended with much irritation, and we have used an ointment containing it for healing the raw surface produced by blisters when other means had failed; and we conceive that its efficacy in checking many forms of diarrhœa is conclusive evidence on the same point. These circumstances, in our opinion, give chalk an advantage over magnesia for general use in dyspeptic complaints, and a farther recommendation is, that the salts which it forms with oxalic acid are insoluble, which is not the case with those of the same acid with magnesia.

Be these reasonings correct or not, we have had such convincing proofs of the virtues of chalk in indigestion, in which we know that the late Dr. Frampton placed so much confidence, because he obtained so great success from its use, that we have laboured to recommend it for more general employment. Magnesia has obtained greater favour with the profession than chalk, from its possessing less of a constipating effect; yet chalk has no astringent and no narcotic influence, so that it can here only act by allaying existing irritation, and diminishing the operation of irritating agents. The late Dr. Frampton was in the habit of counteracting the constipating effects of chalk by combining it with sulphate of magnesia; and we have ourselves pursued the same course, unmindful of the erroneous prejudice excited against this mixture as unchemical by a learned professor who was not careful to be correct before he thus condemned it. Without denying that there may be cases of extreme gastric distress in which it is desirable to unload the stomach with as little delay as possible, where the use of emetics is proper, we by no means assent to the practice of invariably commencing the treatment with them. The employment of an emetic does not supersede the necessity for aperients, and it seems hard to subject the patient to the action of both. Our own practice has been to procure a brisk action of the bowels at stated intervals by means of mercurial purgatives, employing the ant-acid mixture * at the same time. Thus we have ordered a powder of calomel and jalap, or of calomel and rhubarb, to be taken on alternate mornings, or the pills prescribed below † to be used on alternate nights; and we have pursued this treatment till the pain has diminished or disappeared. If the pain prove obstinate, benefit will be derived from the application of a blister to the pit of the stomach.

In cases of less duration and less severity, the mixture given below ‡ has often appeared very beneficial, relieving pain and removing nausea and vomiting, which last object is promoted by the occasional exhibition of a mercurial, as one grain of calomel and one of ginger, with three of white sugar, given on alternate

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* ℞ Misturæ Cretæ, ℥iss.
Magnesiæ Sulphat. gr. xv. ad. ℈ij.
Solve fiat haustus ter die sumendus singulis his haustubus adjice pro re natâ.
Confectionis Aromaticæ, gr. xv.

Vel,
℞ Tincturæ Hyoscyami, ♏xx.

Vel,
℞ Tincturæ Lupuli, ʒj.

Vel,
℞ Spiritus Ætheris Sulphurici, ♏xx.

Vel,
℞ Acidi Hydrocyanici diluti, ♏iij.

† ℞ Extract. Coloc. Comp. gr. xv.
Pulv. Scammoneæ, gr. x.
Hydrarg. Chlorid. gr. iij. ad gr. v.
Mistur. Acac. q. s.
Olei Carui ♏iij.
Fiat massa in pilulas vj. dividenda quarum sumat ij. vel j. alternis noctibus.

‡ ℞ Magnesiæ Carbonat. ℈j.
Misturæ Acaciæ.
Syrup. ā ʒj.
Aquæ Pimentæ.
Aquæ puræ, ā ʒv.
Magnesiæ Sulphat. ℈j ad ʒj.
Misce; fiat haustus ter die sumendus.

Vel,
℞ Magnesiæ, ʒiss.
Pulv. Rhei. ℈j.
Aq. Fontan. f. ℥iv.
— Cinnam. f. ℥iss.

Spirit. Lavend. C. f. ℥ss. M.

Ft. mistura, cujus sumat cochl. ij. ter in die.

* Take Chalk Mixture, an ounce and a half.
Epsom Salts, fifteen grains, to two scruples.
Dissolve for a draught to be taken thrice a day.
Add to each draught, as occasion may require, either of
Aromatic Confection, fifteen grains,
Or,
Tincture of Henbane, twenty minims;
Or,
Tincture of Hop, a drachm;
Or,
Spirit of Sulphuric Ether, twenty minims;
Or,
Dilute Hydrocyanic Acid, three minims.

† Take Cathartic Extract, fifteen grains.
Powdered Scammony, ten grains.
Calomel, three to five grains.
Mucilage, enough.
Oil of Caraway, three minims.
Mix and divide into six pills, of which let two or one be taken on alternate nights.

‡ Take Carbonate of Magnesia, a scruple.
Mixture of Acacia.
Syrup, of each, a drachm.
Pimento Water.
Pure Water, of each, five drachms.
Epsom Salts, a scruple to a drachm.
Mix for a draught to be taken thrice daily.

Or,
Take Magnesia, a drachm and a half.
Rhubarb in powder, one scruple.
Pure Water, four ounces.
Cinnamon Water, one ounce and a half.
Compound Spirit of Lavender, half an ounce.
Of this Mixture two table-spoonsful may be taken three times a day.

nights to the third or fourth time; or of five grains of blue pill, or of either of these preparations conjoined with two or three grains of hyoscyamus: or the calomel may be given with opium to the extent of two grains of the former and one of the latter, if the vomiting do not readily disappear; and this dose may be repeated each night for a time, or half the quantity of each may be given with each draught. We have ourselves seldom or never had recourse to narcotics with this view, and conceive that they should be reserved as *derniers ressorts*, to be employed where other means fail. We are not one of those who think that whenever a man, woman, or child feels sick, or has vomited, the stomach is immediately to be filled with carbonic acid evolved from effervescing mixtures, or that this evidence of irritation and disorder is to be quieted by hydrocyanic acid or opium.

The first object of the scientific practitioner is to remove all sources of irritation, whether primary, as crude and indigestible matters, or such as offend by their bulk and quantity only; or secondary, as acids and depraved secretions, resulting from the recent and previous action of such primary irritants; and to efface from the mucous membranes such changes as these combined sources of irritation may have impressed upon it. If this plan of treatment fail to produce the desired effect, if there be some source of irritation which it is beyond our power to eradicate, or some irritability in the stomach which persists after the removal of the causes which first excited it, then narcotics will be properly employed to palliate an irremediable evil in the first case, to relieve a functional disorder in the latter. If we resort to them earlier, we shall find that we are not so much combating the disease in its stronghold as marking some of its symptoms.

We do not deny that there are cases in which opiates are beneficially employed. In a few we have found relief from them when other means had failed; yet we deem those other means, such as we have just insisted upon, proper precursors, or accompaniments, of the treatment by narcotics. In the same manner, we know opium to be a very valuable remedy in many inflammatory affections, yet we do not employ it to the exclusion of bloodletting and other antiphlogistic means. Pills containing half a grain of opium and one of calomel, with two of extract of hop or gentian, given thrice a day, together with an alkaline and absorbent draught, as already suggested, may occasionally be necessary, and very conducive to present relief and permanent cure. In other cases the salts of morphia are useful, a quarter of a grain of the acetate or hydrochlorate, with a small addition of its own acid, being taken thrice a day in some aromatic water, as that of cinnamon, or some light bitter, as the infusion of calumba, or the compound infusion of orange peel, or in a stronger tonic, conjoined with a purgative, as the compound mixture of gentian. In some cases, instead of morphia, as much as from three to five minims of hydrocyanic acid, of the Pharmacopœial strength, may be given in any of the above vehicles. Where the vomiting is very obstinate so as not to have yielded to any of the means above described, we may try a prescription of Dr. Golding Bird's, in which one grain of strychnia, with a drachm of vinegar, is dissolved in six ounces of pimento water, a tablespoonful, or twelfth part, being taken every four hours till the stomach is quieted. We have rarely tried this remedy, we think only twice, and then unsuccessfully. The patient should be cautioned against taking an overdose of so powerful a remedy.

We repeat that our system is by reduced dietary of digestible material, and by other remedial means to get the digestive organs to master the diminished task put upon them, to get them, that is, to do their work without sickness or vomiting, and with little or no pain: when we have reached this point, our next aim is to invigorate them by tonic medicines gradually increased in strength, and by a dietary gradually improved in quantity and nutritious qualities, as increase of digestive power permits it to be done without suffering; yet we must take care that there be no return to the same amount of imprudent indulgence as that in which the malady may have originated. This is the third indication pointed out above, and we proceed to point out the way in which it is to be pursued.

To accomplish the third intention of restoring the tone of the stomach, the loss of which is to be considered as the chief and immediate cause of dyspepsia, we are to employ such medicines as operate directly on this organ, and such remedies, and other means, as have a tendency to strengthen the system in general.

The medicines best calculated to restore the tone of the stomach are aromatics and bitters *, as likewise the sulphate of

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* ℞ Infus. Gentianæ Comp. Liquor. Calcis, ā ʒvj. Misce; fiat haustus ter die sumendus.	* Take Compound Infusion of Gentian. Lime Water, of each, six drachms. Mix for a draught to be taken thrice daily.
Vel,	*Or,*
℞ Infus Rad. Calumb. f. ʒx. Tinct. Cascaril. Tinct. Cort. Aurant. āā f. ʒj. M. Ft. haustus.	Take Infusion of Calumba Root, ten drachms. Tincture of Cascarilla. Tincture of Orange Peel, of each one drachm. Mix them for a draught.
Vel,	*Or,*
℞ Quassiæ, ʒij. Aq. Fervent. f. ℥vj. Colat. adde Tinct. Cascaril. Card. C. āā f. ʒij. M. Capiat æger cochl. iij. ter in die. Adde, pro re natâ, Acid Sulph. Dilut. ♏vj.	Take Infusion of Quassia, five ounces and a half. Tincture of Cascarilla. Compound Tincture of Cardamoms, of each, two drachms. Of this mixture let the patient take three table-spoonfuls thrice a-day, adding occasionally six minims of Diluted Sulphuric Acid.

quinine*, the mineral acids, and chalybeates.† The latter, in particular, are of eminent service in an impaired or capricious appetite, and weakness of assimilating organs, irregular digestion, flatulent distension of the abdomen, anxiety about the præcordia, difficult respiration from sympathy with the stomach, and occasional vomiting of viscid mucus.

Vel, ℞ Infus. Cascarillæ, ℥vss. Acid. Nitrici diluti, ʒss. Acid. Hydrochlorici, ♏x. Syrup. Aurantii, ℥ss. Misce; sumatur quarta pars ter quotidie.	*Or,* Take Infusion of Cascarilla, five ounces and a half. Dilute Nitric Acid, half a drachm. Hydrochloric acid, ten minims. Syrup of Orange Peel, half an ounce. Mix, and let a third part be taken thrice a day.
Vel, ℞ Misturæ Gentianæ Comp. ℥vss. Sodæ Sesquicarbon, ℈j. Bismuthi Trisnitrat. gr. xij. Syrup. Papav. ℥ss. Ft. mistura ut antea sumenda.	*Or,* Take Compound Mixture of Gentian five ounces and a half. Sesquicarbonate of Soda, a scruple. Trisnitrate of Bismuth, twelve grains. Syrup of Poppies, half an ounce. Make a mixture, to be taken as before.
* ℞ Quinæ disulphat. gr. xviij. Pulv. Zingiberis, gr. xij. Extract. Coloc. Comp. gr. xv. ad ʒss. Syrup. q. s. Misce; fiant pilulæ xij. sumat j. ter in dies vel omni mane et meridie.	* Take Disulphate of Quinine, eighteen grains. Powdered Ginger, twelve grains. Compound Extract of Colocynth fifteen to thirty grains. Syrup, enough. Make into twelve pills, and let one be taken three times a day, or in the morning and at noon.
Vel, Cinchoninæ, gr. x. Acid. Aceti dilut. ♏xxx. Aquæ Cinnamomi, ℥vss. Syrup. Rosæ, ℥ss. Misce.	*Or,* Take Cinchonine, ten grains. Dilute Acetic Acid, thirty minims. Cinnamon Water, five ounces and half. Syrup of Roses, half an ounce. Mix.
Vel, ℞ Quinæ et Ferri Citratis, ℈j. Aquæ distillat. ℥vss. Syrup. Zingiberis, ℥ss. Misce.	*Or,* Take Citrate of Quinine and Iron, a scruple Distilled Water, five ounces and half. Syrup of Ginger, half an ounce. Mix.
† ℞ Misturæ Ferri Comp. ℥vj. Misce; sumantur cochl. iij. ampla ter die.	† Take Compound Steel Mixture, si ounces. Let three table spoonfuls be taken thric a day.
Vel, Decoct. Aloes Comp. Aquæ Pimentæ, āā ℥iij. Ferri Ammonio-tartratis, ℈j. Misce.	*Or,* Take Compound Decoction of Aloes. Pimenta Water, of each, three ounce Ammonio-Tartrate of Iron, a scrupl Mix.
Vel, Pulv. Cinnamoni Comp. gr. v. Pulv. Ferri Sulphat. gr. ij. Pulv. Aloes Socotrin. gr. j. Misce; fiat pulvis bis die ex theriacâ sumend. — Dr. Abercrombie.	*Or,* Take Compound Cinnamon Powder, fi grains. Powder of Sulphate of Iron, tw grains. Powdered Socotrine Aloes, one grai Make into a powder to be taken twice day, in treacle. — Dr. Abercrombie.

In cardialgia, gastrodynia, pyrosis, and such other complaints of the stomach, the oxide of bismuth is a remedy which has been employed with considerable advantage in a variety of instances. The proper dose is from three to ten grains, with about twenty grains of compound powder of tragacanth, repeated three times a-day. It will be best, however, to begin with a dose of only three grains, increasing it gradually. The remedy is perfectly safe as well as useful. In dyspeptic cases accompanied by gastrodynia, prussic acid has been reported by some practitioners to be a remedy of considerable efficacy, particularly where there has existed at the same time some disease in the heart. It is still a favourite medicine with some, and may be tried in such cases as those just mentioned, in those of nausea and vomiting, in doses of three minims of the pharmacopœial preparation in any aromatic water, or bitter infusion. We have not ourselves found it very effectual for good, and have, therefore, not used it extensively. The oxide of silver has been recommended for use under similar circumstances, from half a grain to a grain of which may be made into a pill with one grain of ginger and two of extract of hyoscyamus, and taken twice or thrice a-day about an hour before meals. This will occasionally be found of service: we have known it to relieve nausea which had been troublesome for some time.

Where the stomach is affected with spasms, as sometimes happens in consequence of an error in diet, or in gouty diathesis,

Vel,	*Or,*
℞ Pil. Galbani Composit. ℈iv.	Take Compound Galbanum Pill, four scruples.
Pulv. Ferri Sulphat. ℈j. ad ʒss.	Powdered Sulphate of Iron, a scruple to half a drachm.
Pil. Aloes cum Myrrhâ, ℈j. ad ʒss.	Pill of Aloes and Myrrh, half a drachm.
Syrup. q. s.	Syrup, enough.
Misce; fiant pil. xxiv. sumantur ij. ter die.	Make into twenty-four pills, and let two be taken three times a day.
Vel,	*Or,*
℞ Pulv. Cinchonæ, ℥j.	Take Powder of Peruvian Bark, one ounce.
Pulv. Myrrh. ʒij.	Powder of Myrrh, two drachms.
—— Cinnam. C. ʒss.	Compound Powder of Cinnamon, half a drachm.
Ferri Subcarbonat. ʒij.	Subcarbonate of Iron, two drachms.
Syrup. Cort. Aurant. q. s. M. Ft. electuarium, cujus quantitatem juglandis sumat ter in die cum Infus. Quassiæ, ℥ij.	Syrup of Orange Peel, a sufficiency to form an electuary, of which the bulk of a walnut may be taken three times a-day, with two ounces of an Infusion of Quassia.
Vel,	*Or,*
℞ Ferro Ammonio-citrat. ℈j.	Take Ammonio-citrate of Iron, a scruple.
Infus. Quassiæ, ℥vss.	Infusion of Quassiæ, five ounces and a half.
Syrup. Zingib. ʒv.	Syrup of Ginger, five drachms.
Misce; sumat quartam partem ter die.	Mix; and let a fourth part be taken thrice a day.
Vel,	*Or,*
Aq. Chalybeatæ.	Chalybeate Waters.

recourse must immediately be had to æther, laudanum, brandy, and aromatics, taken internally, and fomentations or stimulating cataplasms to the epigastric region externally. A draught that gives much relief in cases of spasm and flatulence, especially when they occur in elderly people, or those who have been enfeebled by any cause, or are naturally of a lax habit, consists of about equal parts of the compound decoction of aloes and pimenta water with from fifteen to thirty minims of the spiritus ammoniæ aromaticæ: to which, if requisite, fifteen or twenty minims of tincture of hyoscyamus may also be added. Where there is reason to suspect a gouty taint the compound tincture of colchicum may be substituted for the sal-volatile. The sesqui-carbonate of ammonia, in doses of from three to five grains given in any aromatic water or bitter infusion, has appeared to us also to be very beneficial. Bitters with the ammonia are also very effectual in removing the pain or uneasiness which is felt shortly before meals in those who become exhausted if food be not taken with more than convenient frequency. A regular and rather free action of the bowels to the extent of at least one, but not more than two, evacuations daily, has always seemed to us to promote the improvement of the patient throughout the progress of his cure. Some laxative often sufficient for this purpose is contained in many of the prescriptions above given; but whenever there is a tendency to costiveness, some gentle aperient pills — as five grains of the compound rhubarb pill, or five of cathartic extract, with three of blue pill — may be given on alternate nights, or less frequently, as occasion requires. When oxalate of lime deposits occur in the urine, either nitric or nitro-hydrochloric acid may be taken with advantage. From six to ten minims of the dilute nitric acid in a wine glass of barley water, or five of dilute nitric with one of hydrochloric acid in the same vehicle may be taken thrice a-day; and the quantity may be gradually increased, provided the mixture be not made so sour as to irritate the fauces in swallowing, or cause any uneasiness in the stomach or bowels afterwards. In every case the mouth should be carefully rinsed to prevent any injurious action on the teeth. Sugar, as a general rule, is interdicted in oxaluria; but if a small quantity might be allowed, the addition of a little to the above mixtures is a decided improvement to their flavour. It may be mentioned here, that though alkalis — as soda — give great temporary relief in the paroxysm of heartburn, they are not found in general to lessen the tendency to its recurrences. Indeed, so far is this from being the case that they who have habituated themselves to the use of soda find it necessary to be continually increasing their consumption of it in order to obtain the same amount of ease; while the general health suffers under its employment. The mineral acids, however, given in the manner just suggested after present pain and irritation, and the accumulations of acid, so to speak, have been removed in the way recommended at the outset of our description of the treatment appear to effect a more fundamental good, since they correct the tendency to abnormal formation of acid. We shall do well, therefore, to advise a disuse of alkalis to those who have thus abused them, and the taking for a time such acid mixtures as we have just spoken of. We cannot believe that the various solutions of magnesia—as Dinneford's, Sir J. Murray's, &c.—are calculated to effect any permanent good.

Contrary to what might have been anticipated, the administration of acids is not found of marked advantage in cases of phosphatic deposits in the urine. Dr. Golding Bird says on this subject that, by the persistent administration of acids, the deposit may disappear for a time, but the ailment goes on: all that is effected is to mark a symptom, and an important one, of the progress of the malady. He recommends rather that, after freeing the bowels from any accumulations, tonic-laxatives with sedatives should be employed,—as tincture of hyoscyamus and spiritus ammoniæ aromaticæ, of each twenty minims in compound gentian mixture. He combats gastrodynia in these cases by half a grain of oxide of silver made into a pill, with confection of opium, taken before a meal; and at a later period, when the patient is approaching convalescence, he thinks that much good is effected by sulphate of zinc made into a pill, with extract of hyoscyamus or of gentian, the dose commencing at a single grain, and being gradually increased till it reaches five, which may be taken thrice a-day. In some cases he advocates the use of strychnia, one grain of which is to be dissolved by means of a drachm of dilute nitric acid in twelve ounces of water, and a twelfth part taken thrice a day. It should be remembered that half a grain of strychnia taken at once has been known to produce speedy death; that a third of a grain has given rise to very distressing symptoms, so that it becomes very desirable, for fear of accident, that not more than a fourth part of the solution just described, or three ounces, should be supplied at any one time. Morphia, opium, and narcotics, are appropriate means of treatment in dyspepsia with phosphatic deposits, and in that of spirit drinkers more than in any other form.

The cases where phosphatic deposit is the result of spinal injury, and those where it indicates irritation of the mucous membrane of the bladder, are to be distinguished from those of mere dyspepsia with this attendant symptom, as they may require a wholly different treatment. The co-existence of more or less of paraplegia in the former case, and that of dysuria and catarrhus vesicæ in the latter, will generally enable us to distinguish them. We believe, moreover, that the rule is general, and applies to all urinary deposits; that, when existing chiefly or exclusively in the urine passed some time after meals, they are to be referred to primary mal-assimilation; when occurring in the morning urine, or in that made after a long fast, they are due to secondary mal-assimilation, or at least to some cause independent of primary. Now, it is only when they occur in connection with primary mal-assimilation that they are to be considered indices of the particular form of dyspepsia under which the patient may be suffering; it is when they are thus only primary, that, according to Dr. Prout, the prognosis is more favourable.

To strengthen the system, whereby the powers of the stomach will be made stronger, the patient should take daily exercise on horseback, which will be preferable to walking, as being less fatiguing. Dyspepsia, and the many wretched sensations and nervous affections dependent thereon, usually give way to persevering exercise in travelling about, and new life is imparted to the whole system, mental and corporeal. The person should breathe a pure, dry, and temperate air, rise early every morning, go soon to bed at night, lead a temperate life, and adapt his dress to the climate and changes of the weather.

The use of a tepid bath of about 96 degrees of heat for twenty minutes or so, every other day for two or three months, has, in many instances, proved of great service to dyspeptic persons. Indeed it would be best to begin with tepid bathing, and so reduce the temperature gradually. Tepid bathing communicates heat to the system, and it likewise stimulates it, and causes absorption more than exhalation.

The mind is to be amused at the same time that the body is employed; hence it is that mineral waters, and places of public resort, have always been found very efficacious in alleviating dyspeptic complaints. Mineral waters are indeed of themselves powerful remedies in cases of dyspepsia; but their efficacy is greatly increased by drinking them at the spring, where the patient's mind being constantly engaged by the company and a great variety of amusements, he is sure to receive both hope and entertainment. The advantages of air, exercise, particularly on horseback, and agreeable prospects, admirably coincide, in most cases, with the general curative effect of the spring itself.

Buxton water is found of considerable service in removing many of the symptoms of defective digestion and derangement of the alimentary organs consequent to a life of high indulgence and intemperance. A judicious use of this simple remedy, Dr. Saunders* observes, will often relieve the distressing symptoms of heartburn, flatulency, and sickness; and, if persevered in, will increase the appetite, render the secretions more regular, and improve the general health and spirits, that are so intimately connected with the functions of the digestive organs. A spontaneous diarrhœa is sometimes a consequence of its use at first; but it is more common, especially in habits where the action of the bowels is naturally sluggish, for costiveness to come on during a course of this water, which must be remedied by laxative medicines.

In dyspeptic affections, spasms of the stomach or intestinal canal, and similar disorders, great benefit is derived from a use of Bath water; but it ought to be persisted in for a considerable length of time. Sir George Gibbs bears ample testimony to the benefit derived by dyspeptic patients from both the internal and external use of the Bath waters; and Dr. Falconer observes, in his treatise on these waters, that every medical practitioner of the place must have seen instances of persons labouring under want of appetite, pain and spasms of the stomach and bowels, together with other symptoms of depraved digestion, and want of power in the proper organs to perform their functions, joined to a great degree of weakness both of the body and spirits, much relieved by a use of the Bath waters. Dyspepsia, foulness of the stomach, bilious vomiting, acidity, heartburn, and spasmodic pains in any part of the alimentary canal, are complaints in which a use of Seltzer water affords likewise great relief.

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* See his Treatise on Mineral Waters.

Pyrmont water is another remedy which may be advantageously used in all cases of debility, where the constitution requires an active tonic, and which at the same time does not excite a permanent heat. It increases the secretion of urine, and sometimes occasions a temporary eruption on the skin. It is of an agreeable, though strongly acidulated, taste, and emits a large portion of gas, which affects those who drink it with a sensation somewhat resembling that produced by intoxication. The dose must vary according to circumstances and the nature of the patient's complaint, but, in general, the quantity to be taken ought not to exceed three pints per day.

If a person residing in a warm climate should labour under chronic weakness for any length of time, he will act prudently in removing to a colder one before the disease becomes inveterate, and lays the foundation of some dangerous complaint. If his circumstances or business will not admit of such a change, he ought then to remove to the coolest situation that can be procured; or, in preference to remaining on shore, he may sleep on board of some vessel; and as often as opportunities offer, he should make short voyages, as wonderful recoveries have been effected by sea-air in cases of this nature.

The diet in dyspepsia ought to be nutritive and generous, consisting chiefly of animal food, on account of the disposition to acescency in the stomach; and it should be taken every three or four hours, and never exceed a few ounces at any one time. Moreover, due care is to be taken to masticate it properly, in order that it may be reduced by comminution and salival commixture to a semi-fluid state. Instead of fermented bread, the patient should eat biscuit with his food. Idiosyncracy, and various powers of digestion, render it a difficult matter, however, to lay down any certain rules of the dietetic nature; for some men are possessed of such digestive powers as never to feel themselves incommoded by quantity, or the most heterogeneous qualities of their food. A man's own observation as to what sort of food agrees best with him, and what he has experienced to disagree and prove injurious, will be the best guide for him in regulating his diet. Only a very small quantity of some diluent fluid should be taken at meals, nor until some time after each repast, lest the solvent property of the mixed saliva should thereby be diminished; nor should the quantity of fluid taken at once ever exceed half a pint, nor be repeated oftener than at intervals of three hours. About half an hour before swallowing the portion of aliment proposed, brisk friction should be performed with a flesh-brush over the region of the stomach during some minutes, and a similar operation may follow the meal.

A moderate use of wine—such as Sherry—ought to be allowed; but should this disagree with the patient, and become acid on his stomach, weak brandy and water may be substituted for ordinary drink. Under no other circumstances should a use of ardent spirits be resorted to; as by an indulgence in them a habit imperceptibly steals on, before the person is aware of the consequences to which it leads. By too free a use of spirituous liquors, obstructions in the principal organs ensue, the nervous system becomes blunted and depraved to every feeling, the energies of the mind suffer, loss of memory takes place, a train of nervous disorders come on, and an attack of jaundice, dropsy, or consumption, at length terminates existence.

In this progress, even the passages to the stomach lose their feeling, become indurated and callous, and the organ itself, taking on the same state, has its digestion impaired, and becomes unfit to prepare nourishment for the body. Pure wine, in a moderate quantity, gently stimulates, increases the action of the heart and arteries, and augments the nervous energy over the whole body, communicates a serenity and ease of mind, a liveliness of imagination and a powerful exertion of every faculty; but, on the other hand, if taken immoderately, these favourable appearances are changed, the powers of the nervous system are weakened, the mind is deranged, and in the end both motion and sensation are much impaired, if not lost.

In that species of chronic debility which is brought on by drinking spirituous or fermented liquors to excess there is not much reason to expect a return to healthful vigour where the power of digestion is considerably destroyed; but in other cases, the person may probably recover his health by a prudent and gradual diminution of the quantity of spirits. In such a case he should at first omit one-fourth of the quantity of spirit he has lately been accustomed to; and if in a fortnight his appetite increases, he should be advised to omit another fourth; but if he perceives that his digestion becomes more impaired, from the want of the usual quantity of spirituous potation he should then be advised to continue as he is, and rather bear the ills he has than risk the encounter of greater. Animal food, with or without spice, is at the same time to be recommended, as likewise the sulphate of quinine or cinchona bark with myrrh and steel, between his meals. At night he may take half a grain or a grain of opium, with five or eight grains of rhubarb. The pallid and bloodless condition of habitual drinkers is an indication for the use of the preparations of iron, with which there is special reason for combining a laxative on account of the impeded circulation in the liver. As we have already mentioned, narcotics are useful in these cases, as they calm the nervous excitement of the general system. Bitters, too, are useful, and the infusion and tincture of hop well deserve a trial, from their possessing both tonic and narcotic properties. Opiates at night, as recommended above, are often useful; but it often is preferable to give them in smaller doses more frequently, as five minims of the tincture of opium thrice a day in a tonic draught. Both the sulphuric and nitric ethers in moderate doses are valuable adjuncts to such draughts.

Various dyspeptic affections of the stomach are apt to arise in consequence of a stricture or strictures in the œsophagus or tube through which the food is conveyed to it. In all such cases, a fair and sufficiently long trial should be made by the introduction, once or twice a-day, of a bougie of a proper size, composed either of wax and oil spread on linen, or of the elastic gum, with the view of dilating, in a gradual manner, the strictured part of the tube. We should begin with a bougie of a moderate size, and, after a few days, lay it aside for one a little larger.

When dyspepsia is connected with biliary derangement, and there is considerable yellowness of the skin, with the like tinge in the whites of the eyes, then the use of mercurial alteratives will be proper and advisable. As such we may recommend a pill consisting of half a grain of calomel with one grain of powder of ipecacuanha, and the like quantity of powdered rhubarb, to be taken every night at bed-time, or we may give one grain of calomel with two grains of antimonial powder, made into the same form, every other night. We shall thereby promote healthy secretions in some very bad states of the assimilating viscera. To clear the intestinal tube, some gentle aperient medicine—such as an infusion of senna, with a drachm or two of the sulphate of magnesia—may occasionably be recommended. In the intervals, tonic medicines may be resorted to. Should a preference be given to the pilula hydrargyri over the submuriate of mercury, we can prescribe about two grains of the former with the like quantity of the extract taraxaci, and the sixth of a grain of tartarised antimony, made up into a pill, which is to be taken every other night, and the aperient medicine before recommended after three or four doses of the alterative pill.

The mineral acids, but particularly the diluted nitric, may be considered as good tonics. The mixture of nitric and hydrochloric acids may also be tried.

In those cases of dyspepsia accompanied by a bilious tinge of the countenance and eyes, a tepid bath will be a good auxiliary remedy, and, when used of the temperature of 90 to 95 degrees, will prove both refreshing and restorative.

HYPOCHONDRIASIS, OR HYPOCHONDRIAC AFFECTION.

This disease, known likewise by the name of low spirits, or the vapours, consists in a certain state of the mind, often accompanied with dyspepsia, wherein the greatest evils are apprehended upon the slightest grounds, and the worst consequences anticipated from any unusual feeling even of a trifling kind; and in respect to such apprehensions, there is always the most obstinate belief and persuasion of their trustworthiness.

Hypochondriasis bears a strong resemblance to dyspepsia; but there is this difference between them, that the former appears more an affection of the mind than of the body. Hypochondriasis may, moreover, be distinguished from dyspepsia by the languor, listlessness, want of resolution and activity, fear of death, and suspicious disposition, being always present, and by the dyspeptic symptoms being often absent, or, when present, existing in a much slighter degree.

Men of a melancholic temperament, whose minds are capable of great attention, and whose passions are not easily moved, are, at an advanced period of life, most liable to be attacked with this disease; and when it has once arisen, it goes on increasing as life advances, being usually most troublesome in the autumnal and winter seasons.

Hypochondriasis seems to depend on a loss of energy in the brain, or on a torpid state of the nervous system, induced by various remote causes,—such as close and intense study, long and serious attention to abstruse subjects, the constant remembrance of some material loss or disappointment which has occurred, great anxiety of mind, leading an inactive, indolent, or sedentary life, immoderate venery, or a use of crude, flatulent, or unwholesome food, by great irregularity and intemperance, and by long-continued evacuations.

Hypochondriasis is too generally supposed to depend upon a deranged state of the digestive organs; and that such a state may produce lowness of spirits, is too obvious to admit of doubt; but in hypochondriasis there is, for the most part, a strong conviction of diseases, which no vigour of the digestive system can remove, and which becomes the constant object of the patient's solicitude, paralyses every mental exertion, and poisons every rational enjoyment. It appears reasonable to suppose, that hypochondriasis does not depend so much on the state of the digestive system as upon that of the nervous; not so much upon the derangements of distant organs influencing the brain, as upon perverted judgment of the brain exercised on the state of the system at large. To us it appears a variety of monomania, and it is in some respects almost the opposite of melancholia. Thus hypochondriasis is intent upon the healthful enjoyment of that existence which melancholia feels a burthen, and often attempts to destroy; the former is querulous under an imaginary amount of physical suffering; the latter is occupied by moral despondency, which deadens the sensibility to ordinary impressions. Of the essence of hypochondriasis we know as little as we do of that of other forms of monomania or insanity: we know, indeed, only the accidents of either. There is reason to suspect that hypochondriasis is not always a genuine malady, but that it is sometimes assumed by selfishness as an excuse for indolence, and a claim to every kind of indulgence.

The affections of the abdominal viscera with which this disease is usually complicated, have been often treated of as standing in the relation of causes, while, in reality, they should be arranged among its occasional symptoms. That such is really the case, is clearly proved by a consideration of the exciting causes of the disease, which operate upon the system through the medium of the brain. These are, the depressing passions, fear, grief, and despondency, habits of indolence quickly succeeding to a life of industry and employment, long-continued and excessive exertions of the intellectual faculties. The sympathetic derangements consequent on hypochondriasis are not, however, confined to the abdominal viscera; for nothing is more common than to meet, in such cases, with palpitations in the heart, difficulty of respiration, and chronic cough.

Hypochondriasis and other nervous complaints are, through the medium of sympathy, scarcely less infectious (it is probable) than febrile diseases; and even persons naturally of a cheerful temper, by being long domesticated with those of a melancholic, desponding cast, have been known to become decidedly and often deplorably dejected.

The hypochondriac affection is attended with inactivity, a want of resolution with respect to all undertakings, lowness and dejection of spirits, great despondency, and apprehension of evil upon the slightest grounds, and a dread of danger from any unusual feeling even of a trifling kind, together with flatulency in the stomach and bowels, acid eructations, costiveness, a copious discharge of pale urine, spasmodic pains in the head and other parts of the body, giddiness, dimness of sight, and palpitations. In short, it is attended with such a long train of symptoms, that it would fill many pages to enumerate them all, as there is no function or part of the body that does not suffer in turn by its tyranny; the miserable patient indulges wild imaginations, and fancies that he labours under almost every disease; and with respect to these feelings and apprehensions he entertains the most obstinate belief, being highly displeased if any attempt is made to reason with him on the absurdity of his persuasions.

As to the prognostic, the disease, if recent, is rather to be regarded as troublesome than dangerous; but if long continued, there is ground for suspecting the existence of some obscure organic affection of the brain or other organ, such as may produce death. On dissections of hypochondriacal persons, some of the abdominal viscera (particularly the liver and spleen), are usually found considerably enlarged. In some few instances, effusion, and a turgescence of the vessels, and softening of the substance, have been observed in the brain.

The indications to be fulfilled by the treatment are—

1st. To remove as far as possible the causes from which the disorder has originated, and to withdraw the mind from morbid associations by such amusements and pursuits as create interest and fix attention.

2ndly. To correct or alleviate all manifest deviations from a state of health,—as general plethora, local congestions and inflammations, and all functional disturbances of the stomach or bowels or of other organs.

3rdly. To give tone to the whole system, so that there may be a diminished liability to the recurrence of the malady.

To answer the first of these indications, the patient's attention is to be engaged and diverted to other objects than his own feelings; he is to be directed to vary the scene frequently, by going from one place to another; to associate as much as possible with agreeable, cheerful company; to engage in such pursuits as will afford him moderate exercise in the open air, which gardening, riding on horseback, and field-sports, as hunting and shooting, are particularly calculated to do; and by all means to avoid absolute idleness; but in doing this, all application to former studies, especially professional ones, is to be forbidden; entertaining books will, however, be serviceable, as assisting to divert the mind from itself. Gardening is a pursuit highly proper for hypochondriacs, as it will keep the mind alert and the body in exercise: such as live in the country should, therefore, engage in it. In cities or large towns, where this healthy recreation cannot be enjoyed, no better substitute can be employed than that of fitting up an apartment as a work-shop. Working in a cool and free atmosphere would prove a deliverance from that chilliness which for above half of our year so miserably persecutes the tender, and it might act equally as a charm on the ruffled spirits.

Hypochondriasis is far from being a metropolitan disease, as the multiplicity of external objects which in a large capital are continually giving a new direction to the current of thought, is of course unfavourable to the uniformity and self-absorption of the melancholy. A residence, therefore, even in a large city, which affords objects of interest and motives to exertion, ought to be recommended to hypochondriacal or nervous patients, in preference to the most healthy situation in the country, where there is not enough to rouse the sluggishness or fill the vacuity of the mind.

Compassion, and not raillery, is to be bestowed on the hypochondriac, as the firm persuasion which he entertains will not allow his feelings to be treated as imaginary, nor his apprehension of danger to be considered as groundless, however the physician may be of opinion that it is the case in both respects. To gain his confidence, it will be necessary to attend to his complaints as if they were genuine; and to satisfy him, it will by all means be advisable to give him some kind of innocent medicine or placebo, changing it from time to time, whenever he expresses any disappointment of relief.

"In the good old monkish days," writes Dr. Copland, "pilgrimages to the shrines of saints were recommended for the benefit both of soul and body; but in modern times, since these have become divided cures, saintly interference has been but little confided in, and the purifying operation of mineral springs has alone been considered efficacious. And certainly the good effects resulting from faith in either, or in both, of these agents have neither been few nor equivocal. The entire removal of the causes of disorder — the exercise, the change to a purer air, the thorough alteration of habits, of circumstances, and of atmosphere — all combine to produce benefit; and the physician as well as the spring obtains a credit to which the amount of merit really possessed by either by no means entitles them, and which is often heightened by the circumstance of advice previously given to the patient — whilst he is immersed in business and distracted by anxieties, when precluded from exercise and amusement, and when constantly subjected to the combined operation of the causes of the malady — having failed in accomplishing what was probably most judiciously attempted, but which he was counteracting in the most efficient manner in his power."

In the absence of every other diversion, even the swallowing of medicine may be a source of amusement. The times for taking the different draughts, or doses, are so many epochs in the chronology of a hypochondriac, which, by dividing, help to conquer the tedium of his day. However sceptical a physician may be with regard to the inherent or permanent qualities of any medicine, it is his duty, perhaps, to take advantage of the tide of opinion; and he may honestly make use of his patient's credulity, in order to relieve him from the pressure of his disease, and render the partial weakness of his mind instrumental to the general restoration of his corporal strength.*

From the slow evacuation of the stomach in melancholic temperaments, acidity often prevails in a high degree with hypochondriacs; to obviate which, and answer the second indication of cure, it will be necessary for the patient to make use of absorbents and alkalies, as advised under the head of Dyspepsia.

Vomiting, though sometimes employed, is by no means suited to this disease.

Costiveness, which is another frequent symptom in hypochondriasis, is to be obviated by instituting a regular custom of periodically soliciting an evacuation by voluntary and persevering efforts once or twice a-day at certain hours; and until the desired intention can be established in this way, some gentle laxative may be taken occasionally, as mentioned under the head of Dyspepsia.

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* See Essay on Nervous Diseases, by John Reid, M. D.

Harrowgate water may be used with a fair prospect of advantage in correcting the obstinate costive habit of body that accompanies hypochondriasis; and this habit, when removed by mineral waters, appears to be less liable to return than when only the resinous and drastic catharties are employed.

Flatulency is another constant attendant, and is to be prevented by making use of carminatives, essential oils, and spices, formulæ of which will likewise be found under the head of Dyspepsia.

Besides these affections, hypochondriacs are apt to be troubled with spasmodic pains in the head and stomach; to relieve which, it may be proper to employ such medicines as æther, musk, and opium, either given separately or combined together.*

Assafœtida, castor, camphor, valerian, volatile salts, salt and oil of amber, are medicines which are likewise much employed in the cure of the disease; and therefore, when the patient loses a confidence in the one, we can readily substitute another, hypochondriacs being seldom satisfied unless they are liberally supplied with some drug or other. Various forms of these remedies will be found under the heads of Hysteria and Epilepsy.

Nervous people are apt to be troubled with what are termed muscæ volitantes (atoms flying before the eyes), which, though harmless and slight, often excite alarm and apprehension on the part of such patients, and may be mistaken for amaurosis or inci-

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* ℞ Spirit. Æther. Sulph. ♏xx.—xxx. pro dos.	* Take Spirit of Sulphuric Æther, from twenty to thirty minims, for a dose.
Vel,	*Or,*
℞ Misturæ Moschi, f.℥jss.	Take Musk Mixture, one ounce and a half.
Spir. Æther. Sulphur. ♏xx. M.	Spirit of Sulphuric Æther, twenty minims.
Ft. haustus, ter in die sumendus.	Make them into a draught, to be taken three times a day.
Vel,	*Or,*
℞ Infus. Gentian, C. f. ℥jss.	Take Compound Infusion of Gentian, one ounce and a half.
Tinct. Card. C. f.ʒij.	——— Tincture of Cardamoms, two drachms.
Spirit. Æther. Sulphur. ♏xx.	Spirit of Sulphuric Æther, twenty minims.
Tinct. Opii, ♏xvj. M.	Tincture of Opium, sixteen drops.
Ft. haustus.	Mix them for a draught.
Vel,	*Or,*
℞ Spir. Carui, f.℥ss.	Take Spirit of Caraway, half an ounce.
Misturæ Camph. f.℥v.	Camphor Mixture, five ounces.
Spir. Æther. Sulph. f.ʒj.	Spirit of Sulphuric Æther, one drachm.
Tinct. Opii, ♏xxv.	Tincture of Opium, twenty-five minims.
———Lavand. C. f.♏xxx.	Compound Tincture of Lavender, thirty minims.
Ft. mistura, cujus sumat cochl. larg. ij. ter quaterve die.	Mix them, and let two large spoonfuls be taken three or four times a day.

pient cataract: but whenever the appearance of muscæ volitantes is unaccompanied with the sensation of a mist which more or less obscures the appearance of objects, we may safely conclude that it is not a symptom of cataract; and whenever this appearance is not accompanied with a fixed state of the pupil, it may be safely inferred that it is not a symptom of gutta serena.*

The plan of cure for these muscæ volitantes is, to relieve the mind from intense application and from objects of anxiety, to clear the bowels by a brisk purgative, and then to give volatile medicines. Local treatment, or any other debilitating treatment, is commonly injurious.

It should be borne in mind, however, that in one out of the four cases described by Mr. Ware, in the paper referred to, relief from this troublesome symptom was repeatedly obtained from five grains of calomel taken at a dose; a fact which appears to indicate that it may sometimes be connected with a faulty condition of the hepatic secretions. We conceive, therefore, that in all cases it will be desirable to ascertain whether there be any functional disorder of the liver, or cerebral congestion, and to correct these when present before resorting to stimulants. If these derangements are originally absent, or have been removed, we may adopt Mr. Ware's plan of treatment, which consists in giving a drachm of compound tincture of valerian, or half a drachm of this, and as much tincture of castoreum thrice a day in camphor mixture or infusion of cascarilla.

The rule here laid down is deserving of attention in every form of hypochondriasis, lest the error be committed mentioned by Dr. Copland, of not detecting organic lesion in the heart, brain, or other viscera; since, as he adds, there can be no doubt that many cases of obscure structural change in either of these organs, or in any other part, were formerly considered as hyponchondriasis, and most improperly treated as such. We may learn much in this as in other diseases by watching the effects of our medicines, if in so doing we are careful to exercise a sound judgment, measuring the amount of hurt or benefit not by first effect produced, whether disagreeable or comforting, but abandoning a plan under which the unfavourable symptoms are stationary or increase, although each tonic or stimulant draught is said to cheer and do good, and adopting one under which the symptoms are relieved, although the immediate action of the remedy may be complained of as nauseating, or debilitating, or otherwise injurious.

Many of those who labour under a lowness of spirits have recourse to wine or other fermented liquors, and, what is still worse, to spirituous ones, in order to raise them. The momentary relief so obtained is much too dearly bought by the far greater languor which succeeds: and the necessity of increasing the quantity of these liquors, in order to obtain the same effect, irrecoverably ruins the health, and this in the most miserable manner, as has been noticed under the head of Dyspepsia.

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* See Medico-Chirurgical Transactions of London, vol. v. Essay 18th.

It is remarked by the judicious writer before alluded to, that the best way of attempting to conquer the vice of intemperance in another, especially when it has been induced (as very frequently is the case) by some permanent or weighty cause of sorrow, is to picture to the mind of the patient the agreeable change in his situation which would be likely to arise from an alteration in his mode of life, rather than to present to him those deeper shades which must successively ensue from a continuance of his ignominious servitude and habits of fatal indulgence. The latter, though the more common, mode of endeavouring to effect the reformation of an unfortunate inebriate, is in general calculated only to confirm and aggravate the evil, by sinking his spirits lower, and, in some instances perhaps, converting the languor of dejection into the mental palsy of despair.

It is said that the cure of drunkenness among soldiers has been recently attempted in Germany on a new principle,—namely, that of satiating them with the liquor to which they are addicted, and so creating a permanent disgust. We have often been told that the market gardeners in this country, who employ children to gather the common fruits, put no restriction upon their consumption, and that they, indulging their inclinations, very freely for a time soon become indifferent, and scarcely partake at all of what was at first so tempting to them. In the case of drunken soldiers the same system is acted upon, except that they were not only allowed, but compelled, to have whatever they drank mixed with more or less of brandy till it became so nauseous to them that they begged for its discontinuance. Even the most inveterate sots were in this way reformed for a time, and many were cured of the evil habit. It is however only under peculiar circumstances that such a discipline can be enforced.

It is not easy to determine whether the continued use of opium or of strong fermented liquors is most detrimental to the human constitution; unluckily, the victims who addict themselves to either are insnared by a habit which they find it impossible to relinquish, because the constitution, when habituated to a strong stimulus, becomes incapable of carrying on the functions of life without continual excitement, which of itself brings on debility and premature decay.

Grievous, however, as is the depression which takes place as the second effect of all fermented liquors, that which succeeds t the excitement produced by opium, in any shape, is still mor intolerable. It is of course a task less difficult to refrain from th former than the latter, when the latter has been regularly applie to for temporary comfort or support, on a desertion or prostratio of the spirits.

Excessive venery has been already mentioned as an occasiona exciting cause of hypochondriasis: a not unfrequent one, it is to be feared, is the horrible vice of masturbation. Dr. Copland says that this is to be dreaded whenever obstinate hypochondriasis occurs in young lads. It is needless to add that there can be no hope of recovery unless the habits which have induced the malady be entirely abandoned.

In cases dependent upon over-excitement of the genital organs, as indeed in many others, valerian is a valuable medicine: from two scruples to a drachm of the powdered root may be taken with as much bark twice or thrice a-day in water. We are disposed too to think favourably both of the oxide and sulphate of zinc as a remedy in this disease. The valerianate we consider rather as a chemical elegance than as an acquisition to medicine; like many other new preparations, as some of those of iron, it has appeared to us inferior to the older ones of the same metal. Dr. Copland has a formula (No. 663) in which four scruples of powdered valerian and three grains of oxide of zinc, with about two of musk, and two minims of cajeput oil, are directed to be taken thrice a-day; and such a mixture seems well deserving a trial in these cases.

The habitual indulgence in spirituous liquors, and the abuses we have just spoken of, leave probably a debilitated condition of the organs chiefly affected, as well as of the system at large; but in other instances, as we have already noticed, there may be a more or less inflammatory or congested state of the brain or other organs. This, we conceive, is likely to arise where there has been intense study, or other mental exertion; and here it may be necessary not only to remove the causes of mischief by amusing while we relax the mind, but even in some cases to commence our treatment by some small abstractions of blood from the head or neck by leeches or cupping, while an unstimulated diet, and a gentle action of saline aperients may at the same time be suitable. A torpid and congested state of the lower parts of the alimentary canal and of the liver is also a frequent accompaniment of this disease, resulting perhaps from the sedentary habits, or the listless inactivity, which has preceded or accompanies it. Dr. Copland speaks of dilatation of the colon and cæcum as a common occurrence probably due to this cause, while hæmorrhoids are not unfrequent. For the relief of these abnormal conditions he thinks enemata calculated to do good; and he gives formulæ for mild laxatives, some of which we give below.*

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* ℞ Fellis bovin. Extract.
Pilulæ Galbani Comp. ā ʒss.

Extract. Aloes purific. ℈j.
Saponis duri, gr. x.
Pulv. Ipecacuanhæ, gr. viij.
Misce fiant pilulæ, xxx.; capiat unam vel duas quotidie cum prandio. — *Dr. Copland*, No. 260.

Take Extract of Ox gall.
Compound Galbanum Pill, of each half a drachm.
Purified Extract of Aloes, a scruple.
Hard Soap, ten grains.
Powdered Ipecacuanha, eight grains.
Mix and make thirty pills, of which let one or two be taken at dinner time. — *Dr. Copland*, No. 260.

To answer the third indication of strengthening the alimentary canal, and promoting the secretions, a plaster of pix abietina, or of cumini, is to be applied to the abdomen; and chalybeates are to be employed, as advised under the head of Dyspepsia.

Mineral waters, particularly those of Bath and Tunbridge, have been used in hypocondriacal cases with infinite advantage to the patient, which perhaps may be attributed as much to the amusements and avocations accompanying the drinking of these waters at the spring, as to the tonic power they possess, from the small quantity of iron with which they are impregnated. Perhaps the elementary water, by favouring the excretions, may have a share in relieving the disease.

Bitters and astringents are generally supposed to be improper in hypochondriasis, because there is not a loss of tone, as in dyspepsia, but only a torpor or want of activity. Chalybeates, however, may be advisable; the bowels at the same time being freely acted upon.

As a general stimulant, cold bathing may sometimes seem useful to the hypochondriac as well as to the dyspeptic; but this does not often happen, as tepid bathing proves in general much more useful, from the rigidity of the solids which prevails. A bath of about 96 degrees of heat, used for twenty minutes or a quarter of an hour every other day, has in many instances proved of great service. Where a natural warm bath can be procured, a preference should be given to it.

The use of a warm bath is generally resorted to with decided advantage by hypochondriac patients as a remedy for wakefulness, or broken and untranquil sleep, even when they had previously tried all the medicinal and dietetic opiates, as well as other methods, for producing the same effect, without obtaining the object of their wishes.

Frictions of the whole body every morning and evening for ten minutes or longer, with coarse flannel cloths, will be likely to prove beneficial; and so will be also bodily exercise. For the cure as well as prevention of hypochondriasis and other nervous affections, there is no means better adapted than bodily exercise in the open air; and a man suffering under a fit of the vapours will often

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Vel,	*Or,*
℞ Aloës, ℈iiss. Mastiches. Petalorum Ros. rubr. ā gr. xviij. Fellis bovin. inspissat. ʒss. Misce bene et divide in pilulas, xxx.; quarum capiat ij. vel iij. ante prandium. — *Dr. Cop'and*, No. 538.	Take Aloes, two scruples and a half. Mastich. Petals of the red Rose, of each eighteen grains. Inspissated Ox gall, half a drachm. Mix well and make into thirty pills, of which let two or three be taken daily before dinner. — *Dr. Copland*, No. 538.
Vel,	*Or,*
℞ Pil. Hydrarg. Chlorid. Comp. gr. x. Pil. Aloes Comp. ʒss. Extract. Taraxaci, ℈j. Misce fiant pil. xij. sumat j. omni nocte vel p. r. n.	Take Compound Calomel Pill, ten grains. Compound Aloetic Pill, half a drachm. Extract of Dandelion, a scruple. Mix and make twelve pills, of which let one be taken every night, or occasionally.

find, that by riding, or walking, particularly in agreeable company, he will be able to remove it. The load upon his mind may be removed by the continued agitation of his body.

Walking, no doubt, is best adapted to a state of unimpaired health or vigour; but for the feeble and hypochondriacal, or those who are affected by any visceral obstruction or disease, riding on horseback is for the most part preferable to any other kind of exercise. Instances not unfrequently occur of persons with broken spirits and apparently ruined constitutions, in whom an unexpected restoration to strength and cheerfulness has been effected by regular and daily horse exercise, when almost every other method of recovery had been tried without any sensible advantage. Nearly to live on horseback will be a good prescription for all nervous as well as bilious patients.

A person often indolently bends under the burden of hypochondriacal indisposition, which a spirited effort would at first have removed: and on this account I would strongly recommend that those who are labouring under this distressing evil should be stimulated to gradual exertion of all their faculties, both bodily and mental. They should travel about from place to place, and have cheerful people to accompany them.

The diet in hypochondriasis should consist of what is light, generous, and nutritive, avoiding what is apt to prove either acescent or flatulent; and, therefore, animal food will be the most proper. The stomach ought never to be overloaded; neither should it be suffered to remain perfectly empty. If a faintness is perceived at any time between meals, a bit of cake or biscuit may be taken with a glass of wine; which precaution will be the more necessary with those in high life, from the late hour at which dinner is usually served up. Port wine, Sherry, or good Madeira, properly diluted with water, may be used for ordinary drink, instead of malt liquors; but should these disagree with the stomach, water with a small proportion of brandy may be drank in their stead. Tea and coffee are improper articles of diet for hypochondriacs; but more particularly when taken very warm. For breakfast, cocoa, chocolate, and infusions of aromatic herbs and roots, such as balm, sage, and ginger, may be substituted instead of hese.

"Upon the whole," says Dr. Copland, at the conclusion of his rticle on this disease, "although the treatment of hypochondriacs requires to be modified in a thousand ways to meet the innumerable phases of the complaint, and fancies of the patient, the means dvised by Hall will be found the most generally appropriate, and he most beneficial, if persevered in: these are abstemious diet, arly rising, with friction of the abdomen in the morning, cold athing, and warm clothing, and exercise in the open air."

ORDER III.

SPASMI, OR SPASMODIC DISEASES.

IRREGULAR or preternatural motions of the muscles or muscular fibres are characteristic of this order of diseases.

HYSTERIA, OR THE HYSTERIC DISEASE.

THIS complaint appears under such various shapes, imitates so many other diseases, and is attended with such a variety of symptoms which denote the animal and vital functions to be considerably disordered, that it is difficult to give a just character or definition of it; and it is only by taking an assemblage of all its appearances that we can convey a proper idea of it to others.

The disease attacks in paroxysms or fits. These are sometimes preceded by dejection of spirits, anxiety of mind, effusion of tears difficulty of breathing, sickness at the stomach, and palpitations a the heart; but it more usually happens that a pain is felt on the left side, about the flexure of the colon, with a sense of distension advancing upwards till it gets into the stomach; and removing from thence into the throat, it occasions by its pressure a sensation as if a ball was lodged there, which by authors has been calle globus hystericus. The disease having arrived at this height, th patient appears to be threatened with suffocation, becomes faint and is affected with stupor and insensibility; while at the same tim the trunk of the body is turned to and fro, the limbs are variousl agitated, wild and irregular actions take place in the alternate fit of laughter, crying, and screaming. The spasms at length abating a quantity of wind is evacuated upwards, with frequent sighin and sobbing, and the woman recovers the customary exercise sense and motion; feeling, however, a pain in her head, som confusion of ideas, and a soreness over her whole body.

In some cases there is little or no convulsive movement, and th person lies for a considerable time seemingly in a state of sleep without either sense or motion.

We believe that in hysteric fits the loss of consciousness is neve complete, a circumstance which assists in distinguishing them from those of epilepsy; neither are they followed by an equal amount headache or tendency to sleep. The means of arousing the patient— such as dashing cold water on the face—are generally more effectua in cutting short the paroxysm in the former than in the latte disease. Frothing at the mouth, protrusion of the tongue, biting it with the teeth, are not wont to occur in hysteria as i epilepsy; nor is there distortion of the features. It is only when hysteria passes into epilepsy, as it occasionally does, that these symptoms are observed.

Hiccup is a symptom which likewise attends in some instances on the hysteric disease; and now and then it happens that a fit of hysteria consists of this alone. In some cases of this nature it has been known to continue for two or three days; during which it frequently seems as if it would suffocate the patient, and proceeds, gradually weakening her, till it either goes off, or else occasions death by suffocation: but this last is extremely rare. Besides hiccup, other slight spasmodic affections sometimes wholly form a fit of hysteria, which perhaps continue for a day or two, and then either go off of themselves, or are removed by the aid of medicine.

Hysteric affections occur more frequently in the single state of life than in the married, and most usually between the age of puberty and that of thirty years; and they make their attack oftener about the period of menstruation than at any other. They accompany chlorosis, amenorrhœa, dysmenorrhœa, menorrhagia, and all irregularities of the menstrual function.

They are readily excited in those who are subject to them by passions of the mind, and by every considerable emotion, especially when brought on by surprise: hence sudden joy, grief, fear, &c. are very apt to occasion them. They have also been known to arise from sympathy.

Women of a delicate habit, and whose nervous system is extremely irritable, are those who are most subject to hysteric affections; and the habit which predisposes to their attacks is acquired by inactivity and a sedentary life, grief, anxiety of mind, late hours, dissipation, a suppression or obstruction of the menstrual flux, excessive evacuations, and the constant use of a low diet or of crude, unwholesome food.

Hysteria is manifestly connected with a want of tone or energy in the general system. Symptoms of this nature, therefore, occasionally accompany the convalescent state from acute diseases, and coexist with severe diarrhœa and such chronic ailments as produce much constitutional debility. In this irritable state of the nervous system, the hysteric paroxysm once excited is often renewed by very slight causes—such as mental emotion, irritation, or fatigue, which under other circumstances would have had no effect. It sometimes happens that symptoms closely resembling those of hysteria are met with in the more delicate of the male sex.

Hysteria differs from hypochondriasis in the following particular, that spasmodic affections are common in the former, rare in the latter, affection. The two diseases, however, may, and often do, coexist in the same individuals: dyspeptic females occasionally suffering from both simultaneously. We have ourselves witnessed, and authors admit, the existence of a highly nervous condition in the male sex, which nearly resembles, if it be not identical with, the hysteria of women: yet this masculine hysteria is comparatively very rare; so that the sex of the patient will assist the diagnosis. In reference to the age at which it occurs, hysteria belongs to an earlier period of life than hypochondriasis, and is less prone t attack those of melancholic temperament in whom hypochondriasis is chiefly observed. The aspect of the two diseases is very differen to him who has seen them, though description and definition fail t distinguish them with precision. In hysteria there is much complaint of physical suffering without mental despondency; in hypochondriasis there is great moral depression, without much complain of actual pain. Hysteria is often cheerful and happy while describing sufferings said to be excruciating; hypochondriasis dread the consequences of indistinct uneasinesses. The former is querulous under evils, real or imaginary, of a physical nature and distinc character; the latter is ever gathering a prestige of death or dange from anomalous sensations, or enfeebled energies.

In hysteric paroxysms in which there is an absence of convulsiv movement and of spasmodic fixing of the chest, where there i therefore, the nearest approach to the appearance of syncope, th persistence of the pulse will serve to distinguish the one from th other. It is only while the breath is held that the pulse become feeble and intermitting in hysteria and epilepsy; when there complete relaxation of the muscles, it will not be found muc altered, except in frequency.

Some of the distinctions between hysteria and epilepsy hav been already mentioned: the main difference, we believe, to be th consciousness is not lost in the former, while it is in the latte there is mental torpor or apathy in the one, there is no perceptio of passing events in the other. Hence, what has happened in t paroxysm can be recollected by the hysterical, while to the ep leptic its whole duration has been a blank. Hence, too, the hy terical may be aroused by the proposal or practice of what offen modesty; while the epileptic remains unconscious. Thus, wom have been awakened to resistance by the threat to uncover th persons, or the attempt to do so; a proceeding, however, which strongly deprecate as unnecessary and very improper. The hy teric fit is said to come on more gradually than that of epileps and this is probably often, but not always, true. If the glob hystericus generally precedes the one, the aura epileptica is uncommon precursor of the other; sensations which, though d tinctly differing in their most characteristic forms, yet, at tim are so nearly assimilated as to defy discrimination: besides, have known epileptics to have a forewarning of some hours, or ev days, of the approaching paroxysm. A better guide to diagno is afforded by the condition of the patient in the interval betwe the fits. In hysteria there is generally a more or less persiste indisposition marked by the occasional manifestation of more fewer of the phenomena—as chokings, sobbings, cryings—whi attend the paroxysm, or else there are some of the peculiar malad presently to be spoken of, maladies in which the constitution suff little under the agony of pain, or the decrepitude of paralysis; in which there is no pyrexia, no wasting, no haggard expression of countenance, no tendency to death. If the mind suffer, it is from the perversions of caprice, or from the listlessness of ennui: the intelligence is not weakened, nor the power of recollection impaired.

In the intervals between the epileptic seizures, on the contrary, the enjoyment of health is more complete, unless either the fits be of great frequency or the disease of long continuance. Under these latter circumstances the mind becomes affected, imbecility slowly passes into idiotcy, and memory is gradually lost.

Our account of hysteria would be lamentably deficient, were we not to attempt to give a sketch of the many local affections which depend upon an hysterical condition as their cause, and, in doing so, we can adopt no better guide than the eminent surgeon, Sir B. Brodie, who has devoted much attention to their study, and whose lectures on this subject are published in the 19th volume of the London Medical Gazette. From these we shall borrow freely, and commence by indicating the importance of recognising the true nature of these complaints in the lecturer's own words. "I do not hesitate to declare (he writes at p. 198.) that among the higher classes of society, at least four-fifths of the female patients who are commonly supposed to labour under diseases of the joints, labour under hysteria and nothing else." And at p. 201. are the following remarks. "Hysterical affections, in which the symptoms are referred to the spine, are of very frequent occurrence. Such cases are, in many instances, mistaken for those of ulceration of the intervertebral cartilages and bodies of the vertebræ; and, in consequence of this unfortunate impression on the minds of the medical attendants, I have known not a few, but very numerous, instances of young ladies being condemned to the horizontal posture, and even to the torture of caustic issues and setons for several successive years, in whom air and exercise, and cheerful occupations, would probably have produced a cure in the course of a few months." A peculiarity which belongs to all local hysterical affections accompanied by pain appears to be that there is great tenderness about the joint or part suspected to be the actual seat of disease; that this tenderness is met with over a large space, greater than that which is thus painfully sensitive when there is actual inflammation within the joint; that it exists very superficially, that its presence is manifested on light, rather than on firm and deep, pressure; that it resides chiefly in the integuments, being complained of when a portion of loose skin is raised between the fingers so as not to press upon the parts beneath, and that it is far less perceptible if the surface be touched while the patient's attention is fixed upon other matters. It may be remarked of hysteria in general, and of these, its local manifestations, that it knows no comparative: every thing is in extremes, the pains are dreadful and excruciating, the tenderness excessive.

When the hip is the seat of disease, besides the particulars just noted, we are told that there is no wasting of the glutæi muscles;

no flattened appearance of the nates; no formation of abscess even after months or years; no painful startings of the limb at night, attended with frightful dreams. The pain will sometimes prevent the patient falling asleep; but if once asleep, she sleeps soundly for many successive hours. It is not uncommon, too, to find much alteration in the natural figure of the parts; namely, a bulging of the pelvis posteriorly at the same time that it is elevated on the side of the disease, so as to make an acute, instead of a right, angle with the column of the vertebræ. A careful examination, however, will show that this distortion and apparent shortening of the leg are not due to dislocation of the hip, but are the result of the predominant action of certain muscles, and of long-continued indulgence in an unnatural position.

When the symptoms are referred to the knee, there are the same general features as above described; but the patient does not complain when pressure is made on the bed, so as to press the articulating surfaces together; and the leg is generally straight, whereas, in real disease of the knee joint, it is usually a little bent.

Again, when the spine is the part affected, the pain and tenderness are more severe, more superficial, and more extensive than in cases of real vertebral disease; and these may be accompanied by spasms like those of chorea, or even by paralysis; yet a paralysis differing from cerebral or spinal paralysis in this, that the muscles are not incapable of obeying the act of volition, but that the function of volition is not exercised. This, at least, is Sir B. Brodie's theory of hysterical paralysis, and seems to us a very probable one; which may sometimes assist us in forming a diagnosis. Other characters of hysterical paralysis we believe to be that it never gradually augments or declines in severity; when it appears it has attained its full intensity suddenly, and at once, when it declines, it is gone. In this form, moreover, motion alone is lost; sensibility is never abolished: it may be exalted. Dr. Todd gives some valuable hints in a lecture on hysterical paralysis, which may aid us in recognising it. Thus, he says, that, although it occurs in all parts of the trunk and extremities, it very rarely, if ever, attacks the face; and he directs attention to a peculiarity of gait in those labouring under this complaint in a form approaching that of hemiplegia, which he considers pathognomonic. "If you look at a person labouring under ordinary hemiplegia, from some organic lesion of the brain, when he walks you will see that he first throws the trunk to the opposite side, and rests his entire weight on the sound limb, and then, by an action of circumduction, he throws forward the paralysed leg, making the foot describe an arc of a circle. Our patient, however, does not walk in this way: she drags the palsied limb after her as if it were a piece of inanimate matter, and uses no act of circumduction, nor efforts of any kind, to lift it from the ground: the foot sweeps the ground as she walks. This, I believe, to be characteristic of the hysterical form of paralysis." It is no doubt true, as stated above, that hysterical paralysis does not affect the muscles of the face so as to produce distortion in the way in which it occurs in hemiplegia; a dropping of the eyelids, accompanied by a tremulous motion, is, however, not very uncommon; but then, so far as our observations go, it always affects both lids, which is not the case in ordinary ptosis. We have seen, too, a sort of paralysis agitans of the eyes themselves, which appeared to be an hysterical affection. Sir B. Brodie speaks of hysterical tetanus in various forms: these it has not happened to us to meet with; but we have seen tonic contraction of limbs affected with this form of paralysis. Hysterical aphonia, in which the patient speaks in a low whisper, is not infrequent; and hysterical retention of urine is also common; and the author just mentioned appears to consider constipation of the bowels occurring in hysterical females to be sometimes, at least, an analogous affection of the intestines. He has remarked, that the hysterical neuralgic affections are sometimes consequent on some trifling injury or accident, so that this circumstance should not mislead the practitioner; and that they occasionally disappear after a fall or other shock to the system. Strong moral impressions have been known in some instances to put a stop to paralytic affections of long continuance.

Hysterical palpitation of the heart often occurs in the pallid and anæmic, but may occur independently of these conditions, and does not require movement or exertion to call it forth, and is sometimes so violent and obstinate as to be referred to organic disease of that organ; a mistake which it is highly necessary to guard against. Instances must have fallen within the experience of every one who has been long in extensive practice, of women in middle life quite free from all cardiac disease, who had been confidently asserted to be labouring under it at an earlier period of life; a fact which, we conceive, tends to negative the correctness of the former diagnosis; and to disprove, also, a somewhat favourite dogma of some physicians, that long continued functional excitement is wont to result in structural change of the nature of hypertrophy.

A very peculiar condition of mind has been adverted to by authors, as sometimes accompanying an hysterical diathesis. We shall describe it in the words of Dr. Seymour. "The most extraordinary part of this business is the imposition which females will practise in such circumstances. There was a woman in the hospital who had constant vomiting, but there were none of the symptoms usually accompanying it — no real disease of the stomach, no real disease of the brain, and no real disease of the lungs; and yet she vomited every thing she took. I had her very narrowly watched, and it was found that her friends brought her opium, which she took in order to produce the vomiting, and to excite my surprise. This was a case purely of imposition. In private life you will meet with persons, who, under other circumstances, would disdain a falsehood or imposition, who will practise similar deceptions." (Med. Gazette, XIX. page 509.) Sir B. Brodie has remarked upon the same, as manifested in the introduction of various substances into the urine for the purpose of misleading the practitioner. We once had a patient who declared herself for a long time to have a discharge of blood from the right ear, an assertion which was only proved to be a fiction when she was brought under closer observation as an in patient in an hospital. We shall not stop to inquire under what class of diseases this mental condition should be ranged,—whether or not it partake of the character of aberration of intellect; but we conceive that these deceits ought not to be reprobated as ordinary deviations from truth involving moral turpitude; and we know that with the restoration of health they are wont to be abandoned altogether, without leaving any trace of a moral sense at all deficient on the point of sincerity.

With regard to the subjects of the varied forms of hysterical affection, Sir B. Brodie remarks, that many of them labour under an evident weakness and laxity of the tissues, independently of what may be supposed to belong to the tissues of the nervous system. Hence subluxations of parts; hæmorrhages, lividity of parts, or even vesications. It is to be noted, also, that local hysterical affections often supersede in great measure the more ordinary manifestations of hysteria, so that our diagnosis of the true nature of the malady is to be assisted rather by the fact of the patient having at some former time exhibited distinct hysterical symptoms, than by their actual coexistence with the local complaint. Some derangement of the uterine functions is however, as has been already remarked, an almost constant accompaniment of every form of hysteria.

Of the morbid anatomy of hysteria we know nothing, as will appear from the following statement of the eminent surgeon from whom we have already so largely borrowed. "Dissection," he says, "which illuminates so many of the darkest regions of pathology, affords us little assistance here: at least we derive from it only negative information. I have in several instances examined the parts to which hysterical pains had been referred, and in one very aggravated case of the kind made a dissection of all the nerves by which they were supplied, but have never been able to discover in them any thing different from what belonged to the natural condition."

However dreadful and alarming an hysteric fit may appear, still it is seldom accompanied with danger; and the disease never terminates fatally, unless it merges into epilepsy. The malady may, however, prove indirectly mortal, as in one of the cases examined by Sir B. Brodie, in which death resulted from disease of the bladder, consequent on neglected hysterical retention of urine. Possibly hysterical constipation might also terminate unfortunately, though such an event has never come within our knowledge.

If our statement that hysteria is an hereditary disease be questioned by some, it cannot be doubted that its development is favoured by a faulty system of physical education, and by certain modes of life. It is a disease infinitely more prevalent among the rich and unemployed, than with those who must take thought, or engage in labour to obtain their daily bread. Its seeds are surely sown among those who, as children, spend long weary hours in the attainment of endless accomplishments, while little time is allowed for exercise, and the only exercise consists in a languid sauntering on narrow walks in a trim garden, with an occasional formal extramural promenade. Preventive measures must be sought for in freer exercise, and more of it in joyful play, or pleasing pastime in the open and pure air, alternating with studies not too severe or too continuous. Nature requires bodily exercise, not for imparting strength to the limbs alone, but for the maintenance of the proper actions of all the organs, as the skin, the stomach and liver, the heart, and even the brain itself. Now such healthful exercise is not obtained from listless loitering, or in heated ball rooms, or from an easy drive. It is a mistake to imagine that any or all of these can supply nature's wants. But we have indicated sufficiently the means that are available as preventives, or auxiliaries, to other treatment.

In the cure of hysteria two indications are to be attended to.

The first is to allay the spasmodic symptoms, which constitute the fit; and

The second, to lessen the excitability of the nervous system, and strengthen the whole frame during the intermissions of the paroxysms.

The first of these indications is to be answered by bleeding, if the patient is young and plethoric, the pulse full, and the attack quite of a recent nature; but in weak and delicate constitutions, or where the disease has been of long standing, we should never have recourse to this operation.

During the fit, it will be the safest practice to rouse the patient by applying burnt feathers, assafœtida, or volatile salts or spirits, to the nose; by rubbing the temples with æther, and by putting the feet into warm water. Dashing cold water over the extremities and face is sometimes attended with a good effect. During the continuance of the paroxysm due care must be taken that the woman sustains no injury by the violence of her struggles.

In case of costiveness, a laxative clyster, with an addition of assafœtida or castor, may be thrown up into the intestines. Where the fit continues for any length of time, I have seen very speedy and effectual relief afforded by administering clysters composed of turpentine.* We may apply a small blister to the inside of each leg when the fit is of long duration.

As soon as the patient is perceived to be capable of swallowing, some antispasmodic—as assafœtida, castor, ammoniated tincture of valerian, camphor, æther, &c.,—should be given to her frequently. Such medicines may either be administered separately or be combined together, as in the formulæ below.* In those cases where the spasms are very violent and the fit of long duration, opium may be employed in addition to other antispasmodics. In common cases it will, however, be best to avoid its use, as it seldom fails to leave the patient remarkably low, particularly if long continued. It is very rarely, if ever, desirable to bleed hysterical patients: possibly, however, this measure may be required in plethoric females liable to dysmenorrhœa, and exhibiting hysterical symptoms on the approach, or actual occurrence, of the menstrual discharge. It is in these cases, also, that opiates are sometimes of great service; the administration of ten grains of Dover's Powder on one or two successive nights: or of five grains thrice a day till the symptoms abate, often producing the most happy effects.

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* ℞ Ol. Terebinth. f. ℥ss.
Mucilag. Gum. Acac. f. ℥ss.

Misceantur benè simul in mortario, et adde
Decoct. Avenæ, f. ℥xj.
Ft. enema.

* Take Oil of Turpentine, half an ounce.
Mucilage of Gum Acacia, half an ounce.
Mix them well together in a mortar, and add Thin Gruel, eleven ounces: for a clyster.

In cardialgic paroxysms of the hysteric kind, the liquor potassæ subcarbonatis, in doses of twenty drops, frequently repeated, has been found an excellent palliative remedy, and may therefore be prescribed.

The second indication is to be answered by giving medicines, during the intermissions of the paroxysms, to allay the excitability of the system and strengthen the digestive organs,—such as the sulphate of quinine, cinchona bark, and other bitters, with the

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* ℞ Misturæ Assafœtid. f.℥vj. Tinct. Valerian. Ammon. f.ʒij. Spir. Æther. Sulphuric. f.ʒj. M.	* Take Mixture of Assafœtida, six oz. Ammoniated Tincture of Valerian, two drachms. Spirit of Sulphuric Æther, one drachm.
Ft. mistura, cujus sumat ægra cochl. ij. larg. sextis horis.	Of this mixture the patient may take two table-spoonfuls every six hours.
Vel,	*Or,*
℞ Tinct. Valerian. Ammon. f.ʒj. Spirit. Lavand. C. f.ʒij. ——— Cinnam. f.ʒiij. Mistur. Camph. f.℥vj. M.	Take Ammoniated Tincture of Valerian, one drachm. Compound Spirit of Lavender, two drachms. Spirit of Cinnamon, three drachms. Camphor Mixture, six ounces.
Ft. mistura, capiat cochl. ij. larg. pro dos. ter quaterve in die.	Mix them, and let the dose be two table-spoonfuls three or four times a day.
Vel,	*Or,*
℞ Aq. Cinnam. f.℥iss. Tinct. Castor. f.ʒj. Spirit. Ammon. Fœtid. ♏xiv. ———Æther. Sulphuric. ♏xx. M.	Take Cinnamon Water, one oz. and a half. Tincture of Castor, one drachm. Fetid Spirit of Ammonia, fourteen minims. Spirit of Sulphuric Æther, twenty minims.
Ft. haustus, 4tâ aut 6tâ quâque horâ sumendus.	Mix them for a draught, to be taken every four or six hours.
Vel,	*Or,*
℞ Spirit. Ammon. Fœtid. ♏xv.—xx. pro dos.	Take Fetid Spirit of Ammonia, from fifteen to twenty minims.
Vel,	*Or,*
℞ Spirit. Æther. Sulphuric. ♏xx.—xxx. in quovis vehiculo.	Take Spirit of Sulphuric Æther, from twenty to thirty minims, in any vehicle.

sulphuric acid and chalybeates; proper formulæ of which have been inserted under the head of Dyspepsia; but if more agreeable to the practitioner, those mentioned here may be substituted.

In addition to myrrh, steel, and other tonics, mineral waters are found to be very efficacious in hysteric affections; and their powers may be greatly increased by proper exercise, particularly riding on horseback, together with early hours of rising and retiring to rest, a generous nutritive diet, cool dry air, and cold bathing.

In addition to these, the mind is to be kept constantly easy and cheerful, and, if possible, to be always engaged in some agreeable and interesting pursuit; for which reason, watering-places are well adapted for those who are subject to hysteric affections, and particularly where they have taken their origin from grief, anxious thoughts, or other distresses of the mind. The proper management of the mind is indeed essentially necessary, and by a little exertion a woman may often be able to overcome the tendency to the fit.

If the stomach is affected at any time with crudities or bile, so as to excite nausea, a gentle emetic may be taken to remove it; or if there is a tendency to costiveness, it may be obviated by taking some gentle laxative from time to time.

When hysteric affections are associated with deficient or painful menstruation, these faults must be corrected by adopting the means recommended under those particular heads. We must endeavour

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℞ Ferri Subcarbonat. gr. vj.	Take Subcarbonate of Iron, six grains.
Extract. Cinchonæ, ℈j.	Extract of Peruvian Bark, one scruple.
Syrupi, q. s. M.	Common Syrup, a sufficiency to form
Ft. bolus, bis in die sumendus, cum Infus. Quassiæ, f. ℥ij.	a bolus, which may be taken twice a-day, washing it down with about two ounces of an Infusion of Quassia.
Vel,	*Or,*
℞ Extract. Cinchonæ,	Take Extract of Peruvian Bark,
Pulv. Myrrh. āā ʒj.	Powdered Myrrh, of each one drachm.
Ferri Sulphat. ʒss.	Sulphate of Iron, half a drachm.
Ol. Carui, ♏v.	Oil of Caraway, five minims.
Syrup. Zingib. q. s. M.	Syrup of Ginger, a sufficiency to
Fiant pilulæ xxxvj., quarum ij. capiat ægra ter quaterve in die; superbibendo Infus. Gentian. C. f. ℥ij.	form the mass into thirty-six pills, of which the patient may take two, three or four times a-day, washing them down with two ounces of the Compound Infusion of Gentian.
Vel,	*Or,*
℞ Decocti Aloes Comp. ℥ss.	Take Compound Decoction of Aloes, half an ounce.
Mistur. Ferri Comp. ℥j.	Compound Iron Mixture, an ounce.
Misce fiat haustus ter die sumendus.	Mix for a draught to be taken thrice a-day.
Vel,	*Or,*
℞ Infus. Rosæ Comp. ℥vj.	Take Compound Infusion of Roses, six ounces.
Magnesiæ Sulphat. ʒj. ad ʒij.	Sulphate of Magnesia, one to two drachms.
Pulv. Cubeb. ʒij.	Powdered Cubebs, two drachms.
Misce; sumat quartam partem ter die.	Mix; let a fourth part be taken three times a-day.

to remove all complication of the disease before addressing ourselves to that of the disease itself.

To lessen the irritability or excitability of the system, and produce permanent effects, a use of antispasmodics along with tonics is often had recourse to. The under-mentioned formulæ* may be advised on the occasion, the patient washing them down with a little valerian tea.

From the great disposition in the stomach to acescency in this disease, as well as in hypochondriasis, a diet chiefly of animal food will be most proper. Wine diluted with a sufficient quantity of water should be preferred to all other liquors for common drink.

The general treatment of hysteria does not require to be varied according to the particular mode of its manifestation. Whether the disorder appear under the form of frequently recurring paroxysms, or under that of any of the local affections described above as hysterical neuralgia, or hysteric paralysis, the use of the fetid gums, and of the antispasmodic and tonic medicines prescribed above will be attended with more benefit than that of remedies of an opposite character. Thus, Dr. Seymour, in a case of hysterical paraplegia before alluded to, after an unsuccessful trial of bleeding, blistering, and counter-irritation, put his patient on assafœtida, and on assafœtida alone: he gave it her, he says, at night in pills, and in mixture by day, and kept her quiet; and when she had made some progress towards recovery, he ordered the shower-bath in addition, and the patient recovered.

Sir B. Brodie, writing of the treatment of this proteiform malady, says the whole class of tonic remedies, especially steel, quinine, sulphate of zinc, and ammonia, may, under certain circumstances, be employed with advantage. So also it is of importance that the patient should live on a generous diet; that she should take exercise out of doors; that she should live in the pure air of the country, rather than in that of a crowded city; and that her mind should be agreeably occupied without being exhausted by great exertions. The use of what are usually called antispasmodic remedies, especially valerian and assafœtida, is indicated, not merely where there is a liability to hysterical symptoms, but where these symptoms are actually present. In chronic cases of a surgical nature, this author says he has derived much advantage from the use of sulphate of copper in small doses (say a fourth of a grain) given in pill, and long continued. Certain it is that no chronic disease requires the polypharmacy, of which Aretæus speaks, to a greater extent than does hysteria; all tonic and stimulant, all harmless and non-depressing, means will have to be tried in turn. Sir B. Brodie's suggestions are, perhaps, most valuable in regard to what is to be abstained from, rather than what is to be done. Thus, in local affections, distinctly ascertained to be of purely hysterical origin, he deprecates all treatment by leeches, issues, blisters, &c., and gives a preference to gently stimulating liniments and anodyne applications; recommending the compound camphor liniment, with or without laudanum, or a lotion made of equal parts of camphor mixture and spirit of rosemary; and he thinks that a belladonna plaster may be applied with advantage. More active anodyne applications, deserving a trial, are formed by mixing one drachm of chloroform and two drachms of liniment of ammonia, the compound being used immediately it is made. The tincture of aconite, made by macerating twelve ounces of the dried and powdered root in thirty ounces of rectified spirit for fourteen days and then straining, is a powerful agent in the production of local anæsthesia. The addition of half an ounce or an ounce of this tincture to an ounce of soap liniment, makes a good application to the sensitive surface of parts, provided the skin be unbroken and undenuded; but its extremely poisonous nature should cause it to be used and guarded with care. In cases of hysterical retention of urine, the use of the catheter should not be too readily resorted to, or too willingly persevered in; it is better, when practicable, to get the patient to relieve herself in the natural way: and this may often be effected by a little address and persuasion on the part of the medical attendant. Where these means fail, however, recourse to the use of the instrument is indispensable in order to prevent actual mischief from distension of the bladder. In hysterical constipation, we should not too harshly resort to the strongest cathartics; sometimes small doses of aloes are found to attain the desired object more effectually. The pill of aloes and myrrh, and the compound rhubarb pill, in five grain doses, given thrice a day, will sometimes procure the desired relief, which may then be maintained by the same medicines in diminished frequency; or a grain of aloes combined with soap, or added to some anodyne, as extract of hemlock or henbane, or mixed with the compound galbanum pill, may be employed in the same manner.

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* ℞ Moschi, gr. vj.
Camphoræ, gr. iij.
Extract. Cinchon. gr. x.

Syrup. q. s. M.
Ft. bolus, bis terve die sumendus.

* Take Musk, six grains.
Camphor, three grains.
Extract of Peruvian Bark, ten grains.
Syrup, a sufficiency to form a bolus, which is to be taken twice or thrice a-day.

In cases of those hysterical affections occurring in the vicinity of joints, and accompanied by pain, which is said to be augmented by exercise, whenever we are sufficiently satisfied of the true nature of the malady, and of the absence of all local inflammation (points upon which time and observation will remove any doubts which may have existed at first), it will be proper to persuade, to encourage, and to exhort the patient to apply the limb to its proper use, whether it be the leg in walking, or any other part; and this it is our duty to do, at the risk of being thought unfeeling on account of our importunities, which, though urged with firmness, should be softened by kindness of manner, but not shaken by irresolution. And here we must remark in conclusion, that the conscientious physician and surgeon, in cases of hysteria, must often act in opposition to the suggestions of friends, and to the apparent requirements of the distressing sufferings of his patient: he must instruct them not to act entirely under the dictates of a natural, but injurious, sympathy, and must exhort her not to surrender herself to the influences of her malady, but to seek, in mental occupation, in moral considerations, and by bodily exertion, to resist the promptings of morbid sensations. After all, however, it must be confessed that this is a form of disease, from the most judicious treatment of which little credit is to be obtained; for though there is scarcely any peril to life, the prospect of cure is distant and precarious: the more honest medical adviser will often be displaced for him who is more indulgent, and esteemed more kind, though, in truth, not so watchful of the real good of his patient. We have pointed out above what we believe the most effectual means of treatment, and such as will do no harm, if they are slow in producing good. Sometimes, however, some bodily accident, some sudden mental or moral impression, some object of new and deep interest, causing an abstraction of the mind from internal sensations, and giving a new channel to the course of thought, will at once produce that cure which medical attendants have in vain striven to accomplish. Sometimes, again, when friends are wearied out, and cease to be alarmed by symptoms which terrified them at first; when caprices are less indulged, and the patient excites less interest and less attention, the malady may be said rather to wear itself out than to undergo a cure.

EPILEPSIA, OR EPILEPSY.

This disease consists in a sudden deprivation of the senses, or insensibility, accompanied with a violent convulsive motion of the whole body.

This may be taken as a generally accurate description of an epileptic fit of average severity, but the seizure is often much milder. We have known it to consist in a brief loss of consciousness, during which our patient, a boy seven or eight years of age, has stood by our side with his eyes fixed and open, with pupils dilated, destitute of intelligence, with his limbs still and motionless. This state has lasted from half a minute to one or two minutes, and then he has become again sensible as before. In other instances persons are attacked with slight momentary giddiness, and a tendency to rather than an actual loss of consciousness; and these, we believe, to be even yet milder forms of epilepsy. On the other hand, the sufferer may lie for hours in a state of insensibility, without foaming at the mouth, or any struggling or noises, to distinguish his case from one of apoplexy. Two circumstances mainly assist our diagnosis in such attacks,—namely, the absence of stertorous breathing, and the knowledge that the patient has fallen into a similar state many times before.

Epilepsy attacks by fits or paroxysms, which, after a certain duration, go off, leaving the person most commonly in his usual state; but sometimes a considerable degree of stupor and weakness remains behind, particularly where the disease has had frequent recurrences. It is oftener met with among children than grown persons, and girls seem more subject to its attacks than boys, owing, perhaps, to the greater mobility of habit in the female sex. Its returns are irregular, and its paroxysms commence more frequently in the night than in the day, being somewhat connected with sleep. When the disease first develops itself, the intervals between the paroxysms are usually long, probably two or three months; but as it becomes rooted in the system they recur with greater frequency, until at length scarcely a day passes without an attack. It may be considered as an hereditary disease, and although the parents of the patient may not have been afflicted with actual epilepsy, still they will often be found to suffer from other maladies of the same class,—such as palsy, idiotism, or mania. It is a disease sometimes counterfeited in order to extort charity or excite commiseration, and is also frequently simulated by soldiers, and sailors on board of ships of war, with the view of obtaining their discharge. For the detection of such impositions, it is usually recommended to apply a lighted candle near the eyes,—as in the true epileptic fit the pupil is perfectly insensible to light; but this method of detection does not always prove satisfactory. In all such cases, therefore, the introduction of some dry pungent snuff into the nostrils, blown through a quill, will be found more certain and useful. In the true epileptic fit, it will produce no effect whatever; whereas in that which is feigned, violent sneezing will soon be brought on.

Numerous other methods, many productive of considerable pain, are mentioned by authors as having been occasionally resorted to in these cases for the detection of imposture. For an account of several of these, we must refer to Dr. Gavin's work on Feigned Diseases, under the head of Epilepsy; while we are anxious to express our opinion, that a medical man is not warranted in resorting to any expedient for the discovery of the cheat, which would be inadmissible as a part of the treatment if the epilepsy were real. On this ground we strongly object to the application of the actual cautery; the setting fire to straw on which the presumed impostor is placed, or the dropping into the eye irritating substances,—as strong alcohol, oil of turpentine, or the juice of Cayenne pepper pod; though we see no objection to the proposal of these or other measures in the hearing of the patient, with the view of ascertaining how far his emotions may betray the deception. Dr. Gavin cites opinions to the effect that real epilepsy has sometimes been considered as feigned, and conveys to his readers a very proper admonition to lean to the side of mercy in all doubtful cases.

The only disease with which epilepsy can be confounded is hysteria, and from this it may readily be distinguished by the foaming at the mouth, gnashing of the teeth, blackness of the countenance, &c., together with the speedy termination of the fit in sleep, and the absence of the usual symptoms of hysteria,—such as the globus hystericus, palpitations of the heart, involuntary laughing or weeping, and other symptoms usually described in the histories of that disease.

Occasionally we meet with epilepsy in combination with mania.

An attack of epilepsy is now and then preceded by a heavy pain in the head, dimness of sight, noise in the ears, palpitations, flatulency in the stomach and intestines, weariness, and a slight degree of stupor, and in a few cases there prevails a sense of something like a cold vapour or aura rising up to the head; but it more generally happens that the patient falls down suddenly without much previous notice; his eyes are distorted or inverted, so as that only the whites of them can be seen; his fingers are closely clenched; his limbs and the trunk of his body, particularly on one side, are much agitated; the teeth gnash against each other, he foams at the mouth, and thrusts out the tongue, which often suffers great injury from the muscles of the lower jaw being also affected; he loses all sense of feeling, and not unfrequently voids both urine and fæces involuntarily. The breathing is irregular and laborious, and the pulse for the most part is small and contracted.

After a continuance of the convulsions for some time, they abate gradually, and the patient continues for a short period in a state of insensibility, and motionless, as it were in a profound sleep, but on coming to himself feels very languid and exhausted, retains not the smallest recollection of what has passed during the fit, and complains of a degree of stupor and sense of oppression in the head.

Epilepsy, when of long continuance, is apt to produce much injury to the constitution; the memory fails; the mental faculties become gradually more and more impaired; and there is a vacant stare in the countenance that makes a strong impression on the beholder. Sooner or later it produces some other form of a diseased state of the brain, either hydrocephalus, apoplexy, palsy, mania, or idiotism; but occasionally it terminates fatally without inducing any secondary affection, particularly among children.

Epilepsy is properly distinguished into sympathic and idiopathic or cerebral; being considered as sympathic when produced by an affection in some other part of the body, such as acidities in the stomach, worms, teething, &c.; and idiopathic, when it is a primary disease, neither dependent on nor proceeding from any other.

The causes which give rise to epilepsy are blows, wounds, fractures, and other injuries done to the head by external violence, together with plethora of the vessels of the head, lodgments of water in the brain, tumours, concretions, polypi, and a deformity in the shape of the bones in some interior part of the skull. Epilepsy has also been known to arise from an affection of the spinal marrow; and it is to inflammation in that part, of a more chronic form, that those shaking palsies which are attended with pain have been imputed. Violent affections of the nervous system, sudden frights, fits of passion, great emotions of the mind, frequent intoxications, acute pains in any part, worms in the stomach or intestines, teething, the suppression of some long-accustomed evacuation, too great emptiness or repletion, and poisons received into the body, are causes which likewise produce epilepsy. Sometimes it is hereditary, and at others it depends on a predisposition arising from a mobility of the sensorium, which is occasioned either by plethora or a state of debility.

When epilepsy proceeds either from tumours, polypi, concretions, or a deformity in the bones of the skull, the case is hopeless. When it arises from an hereditary predisposition, or comes on after the age of puberty, or where the fits recur frequently and have become habitual, or are of long duration, it will be very difficult to effect a cure; but when it attacks at an early age, and is occasioned by worms or any accidental cause, it may in general be removed. In some cases it has been entirely carried off by the recurrence of an intermittent fever, or by the appearance of the menses or of a cutaneous eruption.

Epilepsy has also been perceived to disappear suddenly about the age of puberty where it has attacked children of five or six years old, and where no treatment has had any effect. The number of fits are always increased by parturition, and by every other thing which has a tendency to debilitate the system.

The appearances usually to be observed on dissection are, serous and sanguineous effusion, but sometimes a turgid tense state of the vessels of the brain without any effusion, a dilatation of some particular part of the brain, excrescences, polypi, and hydatids adhering to it, obstructing its functions, and likewise ulcerations. In some instances the pituitary gland is found in a diseased state, even when every other part of the brain has appeared natural. In numerous dissections the spinal cord has been found more or less diseased.

In epilepsy the intentions of cure should vary according to the cause which occasions the disease.

When it is sympathetic, and arises from worms, medicines possessed of the power of destroying or dislodging these vermin ought to be employed. As an anthelmintic, the oil of turpentine has been found a very useful medicine in some cases of epileptic fits arising from this cause. It may be administered in the form of emulsion, prepared by diffusing the oil by means of honey or mucilage, in some strong aromatic water, and about half an ounce of this, containing a drachm of the oil, may be taken three times a-day in a teacupful of milk. Or an aperient consisting of half an ounce of castor oil, with half an ounce of oil of turpentine, may be given every alternate morning till a third dose has been taken; while an ounce and a half of infusion of quassia, or an ounce of decoction of pomegranate bark, is administered three times a-day. If one or other modification of this treatment do not produce some evidence of the existence of worms after a week's continuance, it will be useless to push it any further. For it is to be observed, that the production of epilepsy in the adult by the presence of worms is not a common occurrence. We have heard of a case in which recovery followed the expulsion of a lumbricus, but we have met with many cases of tape worm unaccompanied by any epilepsy, and very many epileptics who had never given any evidence of suffering from intestinal worms. In children these parasites may be more frequent causes of convulsions.

When the fits proceed from teething, that part of the gum which appears to be inflamed should be deeply scarified, the body to be kept open by laxative medicines or emollient clysters, and the feet be bathed in warm water. When cases occur without any symptom of direct pressure on the brain, and there is occasional sickness, attended with flatulency, disturbed sleep, and other marks of disordered digestion, either proceeding or following epileptic paroxysms, it will be right, especially in the former case, to evacuate the contents of the stomach by an emetic, consisting of a solution of the sulphate of zinc in an aqueous infusion of ipecacuanha, and to repeat it in six, eight, or ten days, according to circumstances.* The dose must vary according to the age of the patient and the different degrees of irritability of the stomach, as no general rule can apply to every case.

Afterwards, if the stomach should exhibit marks of weakness, light bitter infusions may be given, assisted by some active stimulant, as ammonia or oleum cajeputi.

When there is a great prevalence of acid, from the imperfect digestion of vegetable food, soda, liquor potassæ, or liquor potassæ subcarbonatis, may be combined with the bitter infusions.

If the bowels are confined at the same time, magnesia may be employed advantageously. On the contrary, if too much relaxed, which is seldom the case, cretaceous preparations may be resorted to.

If epilepsy appears to proceed from any suppressed discharge, in particular the bleeding piles, leeches should be applied to the hæmorrhoidal vessels, together with fomentations, and we should at the same time administer aloetic cathartics.

Where the disease arises from scanty or painful menstruation, and the fits take place at the peculiar periods of these visitations, we should endeavour to restore the natural determination to the uterus by resorting to a use of the warm bath, stimulating enemata, fomentations applied to the bottom of the belly, relaxing medicines,—as the pulvis antimonialis or antimonium tartarizatum, and the different kinds of emmenagogues, as specified under the heads of Interrupted and Suppressed Menstruation. To these may be added regular exercise, with occasional purgatives.

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* See Dr. J. Clarke on the Diseases of Children.

Where epilepsy attacks children of a costive habit, and seems to take its rise merely from a foulness of the bowels, active purgatives should be employed. A combination of the submuriate of mercury and jalap will be very proper.

If it arises from any stimulus, which by exciting pain occasions the complaint, this ought to be removed as quickly as possible. If it is a case of sympathic epilepsy, and is accompanied with the aura epileptica, we should then endeavour to destroy the part, either by cutting it out, or by applying caustic to it: and when these means cannot be adopted, we ought then to endeavour to correct the morbid affection in it, either by blisters or by inserting an issue in the part.

Should the disease seem to proceed from the partial division of a nerve, and it can be got at readily, we ought to cut through it in the same manner as in tetanus. Cutting off the communication with the brain has likewise been attempted by the application of ligatures upon the limb above the part from which the aura arises. A case which was successfully treated in this way, is recorded by Mr. Adolphus T. Leoffler, Professor at Altona, in his Observations on Medicine and Surgery. An epileptic patient felt, on every attack, a sense of coldness at the sole of the foot, and which gradually ascended till it reached the head. It occurred to the professor to make a strong ligature above the knee of the affected limb, before the cold sensation had proceeded so high. The method succeeded; and as often as he took this precaution sufficiently early, he prevented the attack from taking place.

In the idiopathic epilepsy, the cure consists in avoiding the occasional causes, and in removing or correcting those which predispose to it.

The occasional causes which are to be avoided are, over-distension, turgescence, intoxication, fits of passion, and all other emotions of the mind; and as the disease is confirmed by repetition and habit, so the avoiding frequent recurrences of it is of the utmost importance.

It is a fact well supported, that in some instances the disease has been found to continue from custom alone, after the original cause had long ceased to act. In such cases, our endeavours should be exerted to make nature discontinue this custom, if possible. When an attack can be foreseen, no medicine, perhaps, under such circumstances, will be more likely to prevent an epileptic fit than an emetic given about an hour before its approach. Removing to another country, and changing former habits and the manner of living, may likewise be serviceable in such cases.

If the predisposition to the disease has arisen from a plethoric state of the system, or from a turgescence in the vessels of the head, which is denoted by the patient complaining of headach, giddiness, or stupor during the interval; and where the disease is recent, and occurs in adults or young persons of a robust habit, this is to be obviated by bleeding from the arm, and it may often be necessary to repeat the operation before the tendency to accumulation of blood about the head can be thoroughly subdued. If the patient is advanced in life, and of a delicate constitution, it may be more advisable to substitute topical bleeding from between the shoulders, by means of the scarificator and cupping-glasses, which means will be assisted by the application of a blister to the nape of the neck, and a steady use of purgatives. For children, the best way of abstracting blood will be to apply leeches to the temples. In those cases where, from frequent paroxysms, a morbid condition of the encephalon has prevailed, the insertion of a seton in the neck has been attended with a very good effect.

There is one method of abstracting blood locally (we know not by whom introduced), the benefits of which we have on several occasions witnessed, — we mean the application of a single leech two or three times a week to either nostril, whereby much relief is obtained of headach and drowsiness at a very small cost of blood.

In many cases of epilepsy, the patient lies in a comatose state after the paroxysm of convulsion has ceased, owing to a violent determination of blood to the head; his breathing is stertorous, with foaming at the mouth, and the pulse is full, hard, and beating one hundred or more in a minute. In such cases, bleed to the extent of twenty ounces or more, order cold applications to the forehead, temples, and head, and evacuate the bowels freely by a powerful dose of some active purgative, assisted by an enema of the same nature. If these means do not restore the patient to a state of sensibility, repeat the bleeding again, apply leeches to the temples, and a large blister to the neck, or between the shoulders.

When the predisposition to epilepsy is owing to a state of debility, which is now and then the case, we are to obviate and prevent its effects by recommending the patient to breathe a cool air, to make use of a generous nutritive diet, to take daily exercise adapted to his strength, particularly on horseback, and to go frequently into a cold bath; and besides adopting these steps, he may enter on a regular course of antispasmodic and tonic medicines.

Before mentioning in detail the remedies which have appeared to ourselves to have been sometimes useful in epilepsy, we shall quote the remarks of Dr. Conolly in his published Clinical Lectures with regard to this disease, that the beginner who may read these pages may not have his hopes of success too greatly raised in reference to the treatment of a malady whose nature is so hidden, and whose course is so little subject to controul.

"Reviewing my own experience for more than twenty years, I should say that I have seen a few instances in young persons between ten and fourteen years of age, in which there had been one or two attacks of epilepsy, and the disease was entirely removed, or at least suspended as long as my observation lasted, by a course of purgative medicine, aided by the frequent use of the shower-bath, the occasional application of leeches to the head, the careful regulation of diet, and care to prevent strong mental emotions or exertions. One or two examples I have met with, in which fits that had all the characters of epilepsy in patients rather older than the age I have mentioned, disappeared after the voiding of a large lumbricus; and in one or two cases in young persons, in whom epileptic fits had ensued, on a sudden change from spare to full living, I have seen the fits apparently removed by a return to low diet. There are also epileptic seizures incidental to persons of intemperate habits, especially in warm climates, which temperance and temperate climate will suspend. With some exceptions of this kind I cannot recall a single case of epilepsy cured, and I have tried most of the specifics in vain. Among those disfigured for life by the excessive use of the nitrate of silver, I have scarcely met with one who was relieved of the malady for which they had been so incautiously treated."

The melancholy truthfulness of this account of individual experience will throw some light upon the efficacy of the numerous specifics which we shall have presently to name; and instruct the uninitiated in the fact, that, although there may be wisdom in a multitude of counsellors, in medicine, at least, there is any thing but power in a multitude of resources.

In all cases of epilepsy it is best to commence our treatment by reducing the malady to as simple or uncomplicated a condition as possible: thus general plethora should be relieved by bloodletting, and functional derangement be corrected by means to be learned under the heads of Amenorrhœa, Dysmenorrhœa, Dyspepsia, &c.: constipation of the bowels is to be prevented, and worms, if there be suspicion of their presence, are to be attacked in the ways already described, and temperance, soberness, and chastity are to be recommended, and, as far as may be, enforced. These things having been done as before advised, we shall generally find that the disorders here spoken of were accidental associates, but not occasions, of the epilepsy, which will continue to recur with no great abatement of its severity. What, then, is the treatment of this simplified epilepsy which is found most effectual? We believe that, after general and local bloodletting have done as much service as they can, some relief may still be obtained for the brain by means of active occasional purgatives. Hence we have, at the commencement, combined the specific treatment with the use of one of the forms given below*, and continued this treatment long enough to give it a fair trial, provided the patient appeared to benefit, or at least not to suffer, under it. Our judgment of the benefit or injury produced by these active cathartics, it must be remembered, cannot be justly based on his condition during their operation on the bowels, but is to be rested upon his state subsequent to their continued use, when the primary irritation arising from them has passed off. As regards the strength of these medicines, we endeavour to regulate it so that each dose shall procure three or four free evacuations, while the diet is more liberal than might be allowable but for this drain on the system. After a time we dispense with these active purges, unless there be special reason for perseverance; and where, notwithstanding previous depletion, there is heavy and unrefreshing sleep, and a proneness to headache or weariness in the morning, while the fits, for the most part, take place during the night, an antimonial, in combination with a purgative, when given at bed time, is found to act well in relieving the temporary oppression of the brain, and may be used according to the formula given below.*

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* ℞ Pulv. Radic. Jalapæ, gr. xv.
Hydrarg. Chlorid.
Pulv. Zingib. ā gr. iij.

Misce fiat pulvis alternis auroris ex melle sumendus.

* Take Powdered Jalap, fifteen grains.
Calomel,
Powdered Ginger, of each three grains.

Make a powder to be taken in honey every other morning.

The cold shower bath taken every morning or every other morning has sometimes seemed of service. Setons in the back of the neck, as far as our experience goes, are not preeminently beneficial; nevertheless, in the dearth of more efficient remedies, they are not to be discarded altogether. Of all the specifics employed in this disease, arsenic is that in which we place most confidence; and this we have been accustomed to give either in an antispasmodic mixture of camphor and æther†, or else in a bitter in-

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Vel,	*Or,*
℞ Olei Tiglei, ♏j. Hydrarg. Chlorid. gr. iij. Extract. Anthemid. gr. v. Syrup. q. s. Fiant pil. ij.; sumat j. vel ij. alternis auroris.	Take Croton Oil, one minim. Calomel, three grains. Extract of Chamomile, five grains. Syrup, enough. Make two pills; and let one or both of them be taken every other morning.
* ℞ Pulv. Antimon. Potassio-tart. gr. j. ad gr. iij. Pulv. Colchici Cormi, gr. vj. Extract. Coloc. Comp. ℈j. Syrup. q. s. Misce, fiant pil. vj., sumat j. omni nocte.	* Take Tartarized Antimony, one to three grains. Powdered Root of Colchicum, six grains. Compound Extract of Colocynth, a scruple. Syrup, enough. Make six pills, and let one be taken every night.
† ℞ Liquor. Potassæ Arsenit. ♏iv. ad ♏x. Misturæ Camphor. ʒxss. Spirit. Æther. Sulph. Comp. ʒss. Syrup. Croci, ʒj. Misce, fiat haustus ter die sumendus.	† Take Solution of Arsenite of Potass, four to ten minims. Camphor Mixture, ten drachms and a half. Compound Spirit of Sulphuric Æther, half a drachm. Syrup of Saffron, one drachm. Make a draught to be taken thrice a-day.

fusion with ammonia.* Of the two vehicles we prefer the former; although ammonia has been favourably spoken of when carried to a considerable dose. It is often, however, useful to make an occasional change. The dose of arsenical solution is to be increased drop by drop either once or twice a week, till we rise from the lowest to the highest number mentioned, and may be thus continued till inconvenience arises from its use, when it must at once be left off. It is on its gradual influence that we place our reliance, much more than on any sudden effect to be obtained from it, even if it were safe to bring on a rapid action.

Next to arsenic, sulphate of zinc is the medicine which has seemed to us to exercise the most beneficial influence in epilepsy. This we are in the habit of giving in the form of pill †; in the composition of which there is just enough of cathartic extract to cause the bowels to act three times within two days or twice a day, but not more. It is not our purpose to weaken the patient by a continual drain, but only to guard against the inconveniences arising from loaded intestines. It is well to begin with a small dose of the zinc, for fear of producing sickness, and to increase it by degrees till it reaches ten grains or more. We know of no advantage that the oxyde of zinc possesses over the sulphate, and conceive that it is rather the less powerful of the two.

Among the more novel expedients resorted to in this intractable disease, is one recommended by Dr. Corrigan of Dublin. This consists in an improved mode of exhibiting digitalis, which is the

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* ℞ Liquor. Potassæ Arsenit. ♏iv. ad ♏x.	* Take Solution of Arsenite of Potass, four to ten minims.
Infus. Gentian. Comp. ʒxj.	Compound Infusion of Gentian, eleven drachms.
Ammoniæ Sesquicarb. gr. v. ad ℈j.	Sesquicarbonate of Ammonia, five to twenty grains.
Syrup. Aurantii, ʒj.	Syrup of Orange Peel, a drachm.
Fiat haustus ut suprà dendus.	Make a draught to be given as above.
† ℞ Pulv. Zinci Sulphat. gr. xv. ad ʒss.	† Take Powdered Sulphate of Zinc, fifteen to thirty grains.
Pulv. Zingib. gr. x.	Powdered Ginger, ten grains.
Extract. Coloc. Comp. gr. v. ad ℈j.	Cathartic Extract, five to twenty grains.
Extract. Gentian. ℈j. ad gr. v.	Extract of Gentian, twenty to five grains.
Syrup. q. s.	Syrup, enough.
Fiant pil. xij., e quibus sumat j. vel ij. vel iij. ter die.	Make twelve pills, of which the patient is to take one, or two, or three thrice a-day.
Vel,	*Or,*
℞ Pulv. Zinci Sulphat. gr. xv. ad ʒjss.	Take Powdered Sulphate of Zinc, fifteen to ninety grains.
Pil. Galbani Comp. ℈iv.	Compound Galbanum Pill, four scruples.
Extract. Coloc. Comp. gr. xv. ad ʒss.	Cathartic Extract, fifteen to thirty grains.
Syrup. q. s.	Syrup, enough.
Fiant pil. xxiv. Sumantur ij. ter die.	Make twenty-four pills, and let two be taken thrice a-day.

following. He begins by administering, every night at bed time, an ounce of the infusion (made with one drachm of the dried leaves to half a pint of water), increasing it after a week to an ounce and a half, and after another week to two ounces, beyond which it is rarely necessary to go; and continuing it until sickness of stomach and dilated pupils are observed, when the dose is to be diminished by half an ounce or an ounce until the maximum dose that can be borne without inconvenience is ascertained, at which the administration is to be continued for two or three months. Of this plan of treatment we have only made one trial, and its unfortunate issue deters us from a repetition of it. A young woman of a plethoric habit, who had laboured for one or two years under epilepsy, was treated with a less powerful nightly dose of the infusion than that here mentioned, at first with half an ounce, and subsequently, we think, with six drachms; while a careful watch was kept upon the pulse and general condition of the patient, with a view to discontinuing the medicine if any unpleasant symptoms should arise. None such, however, were observed, but neither did the fits abate in their severity; and after one of these, from which she recovered so far as to regain her consciousness, the patient died suddenly, from, as it seemed, depressed circulation, terminating in syncope. We are willing to allow that the insufficiency of the dose may account for the failure of its curative effects in putting a stop to the paroxysm; but here is a new source of peril, if the fits, which cannot with certainty be prevented, are thus rendered far more dangerous to life. It is to be remarked, that Dr. E. Percival's account of the effects of foxglove in two cases detailed in the ninth volume of the Edinburgh Medical and Surgical Journal, in which it had been given so as to excite nausea, vomiting, and purging, does not hold out much encouragement to its use in large doses, since it failed to produce any abatement of the epileptic paroxysms; a result opposed to popular experience, as well as to that of Sir P. Crampton, as cited by Dr. Corrigan in the Dublin Hospital Gazette for May 1845, from which we have quoted the particulars of his own modified use of it.

The mistletoe, or viscus quercinus, was formerly much used in the treatment of epilepsy. It was given in doses of from half a drachm to a drachm of the powder, or about an ounce of the infusion, repeated twice a day. It was indeed looked upon by many more as an object of superstition than of real utility, and for several years past has experienced almost total neglect. A modern writer on epilepsy[*] speaks, however, highly in its favour, and has recited several cases which were radically cured by it. Dr. Copland, too, seems to have formed a favourable opinion of this remedy.

Indigo, given in powder, and used in doses gradually raised to three or four drachms, has appeared to succeed in the hands of Mr. Noble, as mentioned in the seventeenth volume of the London Medical Gazette.

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[*] See Dr. Henry Fraser's Treatise on this disease.

Other remedies, reputed antispasmodic or tonic, have been employed in the treatment of this disease, some of the principal of which will be learned from the subjoined prescriptions.*

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* ℞ Aq. Anethi, f. ℥jss. Tinct. Valer. Ammon. ♏xv. ——— Castor. f. ʒj. Spirit. Æther. Sulphuric. ♏xx. M. Ft. haustus, bis terve die sumendus.	* Take Dill Water, one ounce and a half. Ammoniated Tincture of Valerian, twenty drops. Tincture of Castor, one drachm. Spirit of Sulphuric Æther, thirty drops. Mix them for a draught, to be taken twice or thrice a-day.
Vel, ℞ Infus. Cort. Cascaril. f. ℥jss. Tinct. Valerian. Ammon. ♏xxx. ——— Calumb. f. ʒij. ——— Hyoscyami, ♏xv. M. Ft. haustus.	*Or,* Take Infusion of Cascarilla Bark, one ounce and a half. Ammoniated Tincture of Valerian, thirty drops. Tinct. of Calumba, two drachms. ——— Henbane, fifteen drops. Mix them for a draught.
℞ Moschi, Castorei, āā gr. x. Opii, gr. ss. Confect. Rosæ, q. s. M. Ft. Bolus, 6tâ quâque horâ capiendus.	Take Musk, Castor, of each ten grains. Opium, half a grain. Confection of Roses, a sufficiency to form a bolus, which may be taken every six hours.
Vel, ℞ Ol. Succin. f. ℥ss. Tinct. Opii, f. ʒij. M. Guttæ viginti, bis terve in die sumendæ ex cyatho aquæ puræ.	*Or,* Take Oil of Amber, half an ounce. Tinct. of Opium, two drachms. Mix them, and take twenty drops twice or thrice a-day in a little water.
℞ Decoct. Cinchon. f. ʒx. Tinct. ejusdem C. f. ʒij. ——— Valerian. Ammon. f. ʒss. M. Pro haustu, ter in die sumendo.	Take Decoction of Peruvian Bark, ten drachms. Compound Tincture of the same, two drachms. Ammoniated Tincture of Valerian, thirty drops. Mix these for a draught, to be taken thrice a-day.
℞ Ferri Ammoniat. gr. x.—xv. Extract. Gentian. gr. x. Syrup. q. s. M. Ft. bolus, ter in die sumendus.	Take Ammoniated Iron, ten to fifteen grains. Extract of Gentian, ten grains. Syrup, a sufficiency to form a bolus, which may be taken thrice a-day.
Vel, ℞ Tinct. Ferri Ammoniat. ♏xv. bis terve die in aquæ frigid. cyatho.	*Or,* Take Ammoniated Tincture of Iron, twenty-two drops twice or thrice a-day in a glass of water.
℞ Cupri Ammoniat. gr. j.—iv. Confect. Aurant. gr. x. M. Ft. bolus, bis in die adhibendus.	Take Ammoniated Copper, one grain, gradually increasing it to four grains. Confection of Orange Peel, ten grains. Make them into a bolus, to be taken twice a-day.

Oil of turpentine has sometimes been useful, even independently of its action as a vermifuge; it may be given in either of the forms specified in a former part of this article; or, again, it may be used as a clyster, made up as directed in the London Pharmacopœia, under the head of "Enema Terebinthinæ."

The diet in epilepsy should consist of such things as are light, nutritive, and easy of digestion, taking care to avoid whatever is apt to prove flatulent. Animal food should be taken sparingly, and spirituous liquors, wine, ale, and porter, altogether be abstained from. The hair should be cut short, and cold applications be applied to the head whenever the skin feels hot. During the intervals of the fits the patient is to keep himself as cheerful and tranquil as possible, carefully guarding against all violent passions or other emotions; and he should take care never to put himself in a hazardous situation, lest a fit should happen to attack him at that period. He should observe early hours for rising and going to bed, and use regular, but gentle, exercise. By managing the patient in the above manner, the attacks may often be rendered less frequent and violent.

When present, due care must be taken to prevent him from bruising himself in his struggles; and especially that he does not get his tongue between his teeth. Rubbing the nose, temples, and pit of the stomach, with æther, may possibly help to abbreviate the fit by its action on the olfactory organ. The like effect has often been produced by putting a little common salt, somewhat moistened with water, into the patient's mouth during the convulsive struggle. The shock of cold water, dashed from the hand upon the patient's face, will at times assist recovery.

CATALEPSIS, OR CATALEPSY.

Catalepsy is that state of the muscular system in which the patients, without fever, lose voluntary motion, and commonly the functions of the five senses, but preserve the mobility of the

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Vel,	*Or,*
℞ Cupri Sulphat. gr. iij.	Take Sulphate of Copper, three grains.
Extract. Cinchonæ, gr. xij.	Extract of Bark, twelve grains.
Opii, gr. ij.	Opium, two grains.
Syrup. q. s. Misceantur benè in massam, et in pilulas vj. divid. quarum capiat æger unam vel duas ter in die.	Syrup, a sufficiency. Divide the mass into six pills, of which one or two may be taken thrice a-day.
℞ Argent. Nitratis, gr. iij. ad gr. xij.	Take Nitrate of Silver, three to twelve grains.
Solve terendo in Aquæ Distillatæ, ♏ aliquot, et adde	Dissolve it in a few drops of Distilled water, then add
Micæ Panis, q. s.	Crumb of Bread, a sufficiency to form a mass, which is to be made into twenty pills. The dose may be from one to two twice or thrice a-day.
Ft. massa, in pilulas viginti distribuenda. Unam vel duas sumat bis terve in die.	

muscles, and keep the exact position wherein they are attacked, or arbitrarily placed by other persons.

The causes of catalepsy seldom appear to be local, but mostly general. There have been examples where plethora has produced this singular disorder, and where it has been removed by a spontaneous hæmorrhage. Suppressed catamenia, worms, and painful emotions of the mind, — as terror, grief, disappointment, profound meditation, anger, &c., — have all occasioned attacks of catalepsy. Women are more frequently attacked by it than men. It sometimes changes into epilepsy, apoplexy, or melancholia, and has been known occasionally to terminate fatally in a few days.

We should, in treating the disease judiciously, endeavour to find out the occasional cause, and adapt our remedies accordingly. If supposed to proceed from plethora, we should unload the vessels by cupping at the back of the neck, cathartics, blisters, a seton, or an issue. When arising from causes of a debilitating nature, tonics joined with antispasmodics will be proper.

During the paroxysms, stimulating cataplasms may be applied to the palms of the hands and soles of the feet. Internally, we may administer musk joined with volatiles, &c.

CHOREA SANCTI VITI, OR DANCE OF ST. VITUS.

THE following is Dr. Copland's definition of this disease: — "tremulous, irregular, involuntary and ludicrous motions of the muscles of voluntary motion, more marked on one side than the other, without pain, occurring in both sexes, more frequently in the female, and chiefly between eight and fifteen years of age." We think the epithet tremulous here employed scarcely appropriate; the muscular contractions are sudden, and produce rather startings or jerkings of the limbs, than anything like tremor. The chorea, too, may be partial: we have seen it affecting one shoulder alone; but we doubt the universality of the circumstance of its affecting one side more than the other.

The appearance of a child labouring under this disease is very peculiar, such as to make a distinctive and permanent impression upon him who has once witnessed it; but it is not easy to convey an idea of it in words. We think that this may best be done by saying that some power besides that of the will acts upon the muscles, not resisting the movements of volition, but disarranging and perverting them. We venture to suggest the term of mechanical aberration, as a parallel of the recognised expression of muscular insanity which is considered descriptive of this disease.

This disease is marked by convulsive actions, sometimes confined to one side, affecting the arms, legs, neck and face: there is an unsteadiness in the fingers, the leg is dragged along in an awkward manner, and there are twitchings in the muscles of the face. When any motion is made, various other muscles act which ought not, and thus there is a hindrance of the effect which the patient intended. It is chiefly incident to young persons of both sexes, but particularly those of a weak constitution, or whose health and vigour have been impaired by confinement, or by the use of scanty and improper nourishment; and makes its attacks between the ages of ten and sixteen, occurring but seldom after that of puberty.

In severe cases, deglutition is occasionally performed with difficulty, and articulation is often impeded, and sometimes completely suspended. With these symptoms there is generally a deranged state of the stomach and bowels. The convulsive agitations vary in their violence, and are subject to occasional exacerbations. During sleep they cease altogether, except in very severe cases. In the advanced periods of the disease, flaccidity and wasting of the muscular flesh take place, the consequence of constant irritation, of abated appetite, and impaired digestion.

In many instances the mind is afflicted with some degree of fatuity, and often shows the same causeless emotions — such as weeping and laughing — which occur in hysteria. Chorea is frequently associated with other disorders: in females, with chlorosis, a retention or suppression of the menses, and hysteria; and in males, with rheumatism and paralysis.

When the disease arises in children, it usually ceases again before the age of puberty, and in adults is often carried off by a change from the former mode of life. Unless it passes into some other disease—such as convulsions, palsy, or epilepsy, or its attacks are very violent—it is rarely attended with danger; but it has at all times been found a very tedious disease, and under the most judicious treatment often continues for several months. It is very subject to a relapse. The appearances found on dissection of fatal cases are, emaciation of the whole body, and the muscles soft, flaccid, and pale. The stomach, bowels, and associated viscera are often pale and flaccid likewise, with a slight effusion of serum in the peritoneal cavity. In some instances, congestion of the vessels of the brain, with a slight effusion between the membranes and the ventricles, have been met with.

Chorea Sancti Viti is occasioned by various irritations, as teething, worms, acrid matter in the bowels, offensive smells, poisons, &c. It arises likewise in consequence of violent affections of the mind, as horror, fright, and anger. Occasionally it depends upon an excessive impulse of blood in the brain, and in such cases it is greatly aggravated by whatever increases the action of the heart, and of course relieved by means that lessen this. In many cases it is produced by general weakness and irritability of the nervous system, and in a few it takes place from sympathy at seeing the disease in others, or by imitating them: hence it not unfrequently spreads in public seminaries, particularly among girls, if its progress is not checked by separation.

In the treatment of chorea, our attention should be directed at a very early period towards endeavouring to shorten the duration of the disorder, as while it lasts a stop is put to the improvement of the youthful mind, and its continuance for any length of time is attended with the risk of permanent fatuity.

Where the disease arises in those of a weak, irritable habit, and wholly unconnected with any species of irritation, either of teething, worms, or acrid matter in the first passages, we should not employ evacuants, but have recourse to strengthening remedies, with the view of increasing the tone of the muscular system, and interrupting that chain of actions in the body which have so long been associated with convulsive movements of the limbs.

Although it be true that a depraved state of the intestinal secretions, or irritation of the bowels from worms or other causes, may accompany the commencement of chorea, and be assigned as the source from which it springs, it does not follow as a consequence that the removal of these irritations will be followed by the disappearance of the disorder. Nevertheless, we think that the first aim of our treatment should be the correction of these abnormal conditions, because their continuance must directly aggravate the nervous affection, and is incompatible with such favourable operation of tonic medicines as is to be relied upon for the cure of the disease. With this view, then, we are in the habit of prescribing purgatives at the beginning of the treatment of Chorea, with the view of unloading the bowels, and insuring a healthy state of the evacuations. Having effected this object, we are content to leave the bowels to themselves, only gently exciting their action when it appears insufficient. It is not our purpose in this disease to produce absorption by purging, or derivation from the brain or any other organ; and a debilitating effect is to be avoided. A combination of rhubarb and magnesia, as given below *, with an occasional alterative of calomel, is well suited to empty the bowels, and to allay any irritation that may exist; but at times stronger aperients—as calomel and rhubarb, or calomel and jalap—must be resorted to for obtaining satisfactory clearance of the bowels. If there be evidence of any congestion of the brain, this of course must be relieved either by leeches or more active purging, and the

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* ℞ Magnes. Carbonat. ʒiss.	* Take Carbonate of Magnesia, a drachm and a half.
Pulv. Radic. Rhei, ʒss.	Powdered Rhubarb, half a drachm.
Mistur. Acac.	Mixture of Acacia,
Syrup. Zingib. ā ʒvj.	Syrup of Ginger, of each six drachms.
Aquæ Piment. ℥ivss.	Pimenta Water, four ounces and a half.
Misce; sumat cochl. ij. ampla bis vel ter quotidie.	Mix, and let two table-spoonfuls be taken twice or three times a-day.
Vel,	*Or,*
℞ Hydrarg. Chlorid.	Take Calomel,
Pulv. Zingib. ā gr. j.	Powdered Ginger, of each one grain.
Pulv. Sacch. albi, gr. iij.	White Sugar in Powder, three grains.
Fiat pulvis alternis noct. sumend.	Make a powder to be taken every alternate night.

former is the preferable course. We have, however, only met with two such cases, in one of which spontaneous bleeding from the nose carried off a considerable weight in the head; while in another, leeches applied behind the ear on the opposite side removed paralysis of one arm, the ordinary treatment of chorea being preserved in all the while.

When the bowels have been cleared out and the motions have become healthy, a tonic treatment is to be pursued, and the preparations of iron, of bark, and of zinc are those which are to be preferred. Arsenic, too, is found to exercise a very beneficial influence in subduing the disease. Of the forms in which iron has been prescribed, there is none which has been more highly commended than the sesquioxide, which may be given in doses of half a drachm or a drachm three times a day, the powder being made into an electuary with treacle. We see no advantage, but some inconveniences, in administering this medicine in the very large doses of half an ounce or more in which it has been sometimes exhibited; and as we believe it to possess no peculiar virtue, we prefer substituting for it either Griffith's mixture, the mistura ferri composita of the London Pharmacopœia, or the tincture of sesquichloride of iron. The former of these is to be ordered in doses of an ounce or an ounce and a half, the latter to the extent of fifteen to thirty minims in water or infusion of quassia, the mixture in either of these cases being made more palatable by the addition of about a drachm of syrup to each dose; or the solution of arsenite of potass may be given in doses gradually increased from four to ten or twelve minims in decoction of bark, or with one or two grains of the disulphate of quinine dissolved in water by means of a few drops of acetic or of dilute sulphuric acid. Oil of turpentine appears at times to produce beneficial effect, and may be used either in the form of enema, as prescribed in the London Pharmacopœia, or given to the extent of from two to three drachms, with an equal quantity of castor oil every morning, or every alternate morning, as an aperient, in which modes of employment it need not interfere with the treatment by tonics just spoken of; or, again, it may be advisable to trust to it alone, in which case we may use it in a mixture thrice a day in the way described under the head of Epilepsy. Chorea, like some other nervous complaints, may be subdued altogether, if only we can break its continuance for a sufficient length of time. Hence, in some obstinate cases, narcotics are of use; we have seen them at least of signal service when thus employed in one patient, a young woman who was suffering severely under a relapse of the disease, which had long harassed her at intervals. We give below a form of one for an adult.*

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* ℞ Morphiæ Acetat. gr. j. ad ij.

Infus. Gentian. Comp. ℥vss.

Syrup. Aurantii, ℥ss.
Solve et misce. Sumat quartem partem ter die.

* Take Acetate of Morphia, one to two grains.
Compound Infusion of Gentian, five ounces and a half.
Syrup of Orange Peel, half an oz.
Dissolve and mix. Let a fourth part be taken three times a-day.

We have lately witnessed a trial of the daily inhalation of æther so as to produce narcotism in the treatment of this complaint; but the influence seems too transient to be of service; an objection which may also be made to the recourse to chloroform, an agent not lightly to be resorted to on account of its terrible caprices.

The diet in ordinary cases of chorea should be nourishing, and include a moderate or even liberal allowance of beer or wine. A tonic treatment, too, should be persevered in for some time after the cessation of the disease with a view to prevent its return: the use of arsenic, however, must cease as soon as possible. Both in the course of the malady and during convalescence, the shower-bath may be taken every morning, or every other morning, with considerable benefit.

Be the seat of the mischief indicated by chorea what it may (and some place it in the cerebellum, and some in the true spinal system, to which its phenomena of an excito-motory character are referred), we believe that the prevalent opinion is in favour of some such treatment as we have described; and that few or none would trust to an antiphlogistic plan, even in forms of the disease attended with considerable excitement and some danger. What we have been saying applies only to simple uncomplicated chorea. If in some cases rheumatism is transferred to the spinal membranes, as believed by Dr. Copland, or in more numerous instances, the same disease, after it has implicated the heart, give rise to chorea, as shown by Dr. R. Bright in his paper on Spasmodic Diseases, published in the twenty-second volume of the Medico-Chirurgical Transactions, the plan of treatment to be followed is that suited to the inflammatory disease. Dr. Bright relied upon calomel and opium in one at least of his examples, and states that in all the chorea disappeared with the removal of the affection of the heart. If the spinal membranes be inflamed, we must make them the object of our treatment by means suited to subdue that condition; but our progress will be less favourable than in the former case.

RISUS SARDONICUS, OR SARDONIC LAUGH.

In this disease there prevails a fit of laughing, arising from no evident cause, which continues often in a violent degree for three or four nights, so as to prevent the patient from sleeping. By its duration in this way, great debility is produced; and frequency of the pulse and other febrile symptoms arise. It then either proves fatal by its violence, or goes off spontaneously.

Antispasmodics—such as musk, castor, assafœtida, camphor, and æther—have usually been employed to remove this disease, but without effect; so that we are unacquainted with any remedy that will prove effectual; and the spontaneous cessation of the fit is more to be trusted to than any aid from medicine. Large doses of opium might probably afford some relief.

TETANUS, OR CRAMP.

Tetanus is an involuntary, and almost constant, contraction of all or several of the muscles, while the senses remain perfect and entire. The muscles affected are exclusively those which during health are under the dominion of the will: the involuntary muscles, as those of the heart and intestines, being exempt from the direct influence of the disease. Although these muscular contractions when the complaint is fully formed, are, as has been just stated, constant or nearly so, and the parts affected in a rigid and almost motionless condition even when they are least energetic, yet they are liable to sudden augmentations of intensity, recurring with greater or less frequency, during which there is great aggravation of the sufferings of the patient, while his body assumes various postures, according as particular sets of muscles predominate over those that oppose them either through greater original power, or greater morbid excitement. These sudden accessions of more violent spasmodic actions constitute the paroxysms of the disease.

In reference to its origin, tetanus may be considered of two kinds, — viz. symptomatic or traumatic, the consequence of wounds, the puncture of a nerve, laceration of a tendon, or extensive burn; and idiopathic, occasioned by exposure to cold. In Europe the traumatic species is almost the only form in which tetanus occurs; whereas between the tropics the idiopathic tetanus is by no means unfrequent. Either species may be acute or chronic in its course.

By practical writers, tetanic complaints have been distinguished into opisthotonos, emprosthotonos, pleurothotonos, and trismus; but these are all evidently only different modifications of one and the same disease.

These affections arise more frequently in warm climates than in cold ones; and infants, a few days after their birth, are frequently the subjects of trismus. They attack persons of both sexes, of all ages, temperaments, and complexions; but the male sex more frequently than the female, and those of a robust and vigorous constitution oftener than those of a weak habit. An idea is entertained by many, that negroes are more predisposed to attacks of tetanus than white people: they certainly are more frequently afflicted with it; but this circumstance may not arise from any constitutional predisposition, but from their being more exposed to punctures and wounds in the feet, by nails, splinters of wood, pieces of broken glass, &c., from going usually barefooted.

Tetanic affections are occasioned either by exposure to cold when under profuse perspiration, by sleeping in the open air on damp ground, by the presence of irritating substances in the stomach and bowels — such as worms — or by some irritation of the nerves, in consequence of local injury by puncture, incision, or laceration. Lacerated wounds of tendinous parts prove in warm climates a never-failing source of these complaints. In cold climates, as well as in warm ones, the locked jaw, or trismus, frequently arises in consequence of various surgical operations, particularly the amputation of a limb, or of gun-shot wounds. Some cases have been recorded where trismus was supposed to be owing to affections of the mind.

Of traumatic tetanus, Mr. Curling says, in his prize essay on that disease, that it is consequent upon every variety of injury and attacks in every condition of the wound. It occurs after the slightest and most superficial abrasions, as also after the most complicated contusions, lacerations, and fractures. It has followed the operation of cupping, the application of a seton to the chest, the extraction of a tooth, the injection of a hydrocele. It has come on, not only while the wound was open, inflamed, or suppurating, but when it was completely healed, and almost forgotten. Cold, which is alone adequate to its production, may co-operate in exciting it in those who have been exposed after wounds or surgical operations on the field of battle, or under any other circumstances.

When the disease has arisen in consequence of a puncture, wound, or any other external injury, the symptoms show themselves generally about the eighth day; but when it proceeds from an exposure to cold, they generally make their appearance much sooner.

In some instances tetanus comes on suddenly, and with great violence; but it more usually makes its attack in a gradual manner; in which case a slight stiffness is at first perceived in the back part of the neck, which after a short time increases considerably, and at length renders the motion of the head both difficult and painful.

With the rigidity of the head there is likewise an uneasy sensation at the root of the tongue, together with some difficulty of swallowing; and great tightness is perceived about the chest, with a pain at the extremity of the sternum shooting into the back. The temporal and masseter muscles are affected, a stiffness is felt in the jaws, which soon increases to such a height that the teeth become closely set together so as not to admit of the smallest opening. When the tetanic affection is confined to the jaws, the disease is called trismus.

During the whole course of the disorder the abdominal muscles are violently affected with spasm, so that the belly is strongly retracted, and feels very hard, a severe pain darting from the bottom of the sternum to the spine in the direction of the diaphragm is experienced, most obstinate costiveness prevails, and both the flexor and extensor muscles of the lower extremities are commonly affected at the same time, so as to keep the limbs rigidly extended.

The flexors of the head and trunk become at length so strongly affected that they balance the action of the extensors, and keep the head and trunk so rigidly extended and straight as to render it incapable of being moved in any direction. The arms, which were little affected before, are now likewise rigidly extended; the tongue sometimes also becomes affected with spasm, and being convulsively darted out, is often much injured by the teeth, the jaws at that moment snapping together. It is to this state of the disease that the term of tetanus has been strictly applied.

In some cases, the spasmodic affection extends no further; in others, the spasms at this stage of the disease returning with great frequency, become likewise more general, and now affect not only the muscles of the neck and jaws, but likewise those of the whole spine, so as to bend the trunk of the body very forcibly backwards; and this is what is named opisthotonos. Where the body is bent forwards, the disease is called emprosthotonos. Trismus, or locked jaw, is almost universally present in greater or less degree, and, as has been stated above, may constitute the whole of the disease. Of the other superadded forms or symptoms, opisthotonos is the most common, emprosthotonos is rare, and pleurothotonos still more so.

The cause of death varies in different cases: in some it appears to arise very suddenly from suffocation produced by the spasmodic closure of the glottis during a paroxysm; in others, more slowly from the same cause, as arising from the fixing of the parietes of the chest, whereby the movements of respiration are greatly impeded; in others, again, the patient dies exhausted. This is the mode of death assigned by Dr. Alison, and is observed in the more protracted cases. Such fatal exhaustion is sufficiently accounted for by the high nervous excitement, by the intense pain, and by the profuse perspirations attending the fast-recurring paroxysms. Mr. Curling repudiates spasm of the heart as a cause of death in this disease; indeed he does not admit its influence over any of the involuntary muscles.

The spasms, which recur at first every ten or fifteen minutes, besides being brought on by slight movements of the body and pressure on the abdomen, are, in the advanced stages, excited by the presentation of any substance, solid or fluid, to the lips, so as at first view nearly to resemble those in a person affected with rabies. Tetanus is seldom attended with either nausea or vomiting, or with any fever, but almost always with most violent pain.

The disorder continuing to advance, every organ of voluntary motion becomes affected, the eyes are rigid and immovable in their sockets, the countenance is hideously distorted and expresses great distress, the strength is exhausted, the pulse becomes irregular, and one universal spasm puts a period to the most miserable state of existence.

In some cases of tetanus the event proves favourable, the symptoms decline gradually, the patient, however, continuing long in a state of extreme weakness, suffering, at the same time, acute pain in those muscles which have been chiefly affected during the height of the disorder.

With regard to the duration of tetanus, when it proves fatal it generally carries off the patient before the tenth day, but sometimes before the fifth; and the younger the subject, the more rapid the disease.

Out of 128 cases tabulated by Mr. Curling, 70 were fatal; and it appears from a review of these that the disease is equally so at every period of life, from the age of ten to that of forty-five years. The mortality is far less, in Europe at least, in the idiopathic than in the traumatic variety, and in females than in males. Of 16 women mentioned in the table, 4 only died, whereas of 112 males, 66, or more than one-half, perished.

In a few instances death has supervened very shortly after the appearance of tetanic symptoms as in half or even in a quarter of an hour; and several are recorded in which it occurred in from twelve to forty hours. Of Mr. Curling's cases, twenty-two were fatal on or before the second day, and fifty-three within eight days after the appearance of symptoms. In one example taken from Morgagni, the patient died after twenty days.

The interval between the infliction of the injury and the accession of tetanic symptoms varies considerably. In one or two instances it has been so brief as to be scarcely appreciable; in a few it has extended only to some hours; while in a large number it has varied from four to fourteen hours or more, three weeks being a limit not often exceeded, though in some examples it has reached to a month or even longer. The longer this interval, the more chronic in general is the disease, and the greater the probability of recovery. Dr. Parry proposed the state of the pulse as a criterion of the degree of danger, asserting that where in adults it fell below 110 on the fourth day recovery, where it exceeded 124 death, was to be anticipated. Mr. Curling repudiates this rule altogether. According to him, speedy accession and an acute character of the disease, as evinced by the violence and frequency of the paroxysms, and more especially a disposition to spasm about the larynx, are to be dreaded, while the opposites of all these inspire hope as to the result.

Morbid anatomy has hitherto thrown little light upon the nature of tetanus; or if any instruction is to be derived from this source, it is of a negative rather than of a positive kind.

We are told that it is common to find congestion of the cerebral sinuses, injection of the vessels of the pia mater with florid blood and more or less increased vascularity of the cerebral substance, together with slight serous effusion, between the membranes and in the ventricles of the brain. Serous effusion, too, with increased vascularity, is generally met with in the membranes investing the spinal marrow, and a turgid state of the vessels about the origins of the nerves. With regard to these lesions, however, it is to be remarked, that they are not invariably present; and that when existing, they do not furnish satisfactory evidence of inflammation. It is probable that in some instances they may have been due to the manner in which death has taken place, — namely, by suffocation; that in some they may have been the effects of position: while their occurrence in many other diseases, unaccompanied by any manifest affection of the nervous centres, or at all events by any of an inflammatory nature, negatives every inference as to their inflammatory character, and renders their import doubtful when met with in fatal cases of tetanus.

It is not denied that some cases are on record in which injuries directly affecting the brain or spinal cord have been followed by tonic spasms, in which, after death, unequivocal evidences of inflammation in the nervous substance, or in the membranes, have been discovered; but these have been so few in number, and have besides been accompanied by such peculiar symptoms not usually belonging to the disease under discussion, that they can hardly be cited as illustrating its pathology. In these instances it is remarked, that the spasms do not recur in such violent paroxysms as in proper traumatic tetanus, and they are besides attended by paralysis, which is not a feature of that malady.

In a few examples blood has been extravasated within the spinal sheath, and small bony and cartilaginous deposits have sometimes been found under the spinal arachnoid; but the chronic character of these bodies, and their not unfrequent appearance unassociated with any spasmodic symptoms, prevent our considering them as essential to tetanus.

The ganglia of the sympathetic system have sometimes, but not uniformly, been found more reddened than usual.

The nerves have in several instances been found injured, and inflamed at the seat of the original wound; but such a participation of the nerves, in an inflammatory action, common to all the other textures connected with the injured part, appears not to be confined to cases of tetanus. Mr. Curling found unusual vascularity in the nerves of a leg amputated on account of excessive suppuration consequent on compound fracture, and in those of the arm of a man who died of phlegmonous erysipelas of the limb terminating in gangrene. In a case of hydrophobia, he tells us that there was vascularity of the nerve leading from the cicatrix of the bite, but that the corresponding nerves of the other arm were still more vascular; a fact indicating the necessity of not drawing inferences from researches of too limited extent. Again, he has seen the nerves carefully traced to a wound at the back of the hand, in an individual who had died of tetanus, without the discovery of any remarkable appearance in them.

The violent action of the muscles in this disease has occasioned, in severe cases, serious lesions of their structure. Thus individual fibres, or larger or smaller portions of the psoæ muscles of the recti abdominis, and probably of others, have been found ruptured; and in some rare examples even bones have been fractured during the spasms. The rigidity of the muscles after death from tetanus is said to be greater, and to persist longer, than under any other circumstances. The coagulation of the blood is often delayed, and sometimes altogether wanting. Engorgement of the lungs, which is often met with, seems to be an effect rather than a cause of the peculiar symptoms present. In the intestinal canal worms of various kinds, and some evidences of inflammation of parts of the mucous membrane, are said to have been met with, but in what proportion these are more frequent after death from tetanus than in other cases has not been ascertained.

If the nerves supplying muscles which are affected with tetanic spasms be divided, the spasms instantly cease in those muscles; whence it appears that the source of the disease is not in the muscles themselves, but in some part of the nervous centres with which they communicate; and it seems farther established, both by reasoning and experiment, that the spinal marrow is its ultimate seat. Mr. Curling refers to the tractus motorius some morbid action in tetanus, the nature of which is beyond our comprehension, farther than that it is not essentially inflammatory, though it may coexist with inflammation. He conceives that a portion only of this tract may become affected, but remarks, that why the muscles of the face, neck, and trunk are much oftener the seat of spasm than those of the extremities, has not been satisfactorily explained.

As the structural changes of the nervous system, if such there be, upon which tetanus depends are confessedly unknown, it is manifest that its seat cannot be determined by the investigations of the anatomist; yet the symptoms of the disease, taken in connection with the ascertained functions of different portions of the nervous centres, sufficiently indicate the spinal cord as the part chiefly, if not exclusively, in fault. We have in eccentric tetanus indeed—that is, in tetanus following some wound or injury, or impression not seated in the cord itself—an example of the reflex function of the spinal cord, as insisted upon by Dr. Marshall Hall. The wound or injury, or other impression, must be regarded as an exciting cause, to give effect to which, in the production of tetanus, the spinal cord itself must have undergone some change from its healthy condition, in consequence of which these sources of irritation awaken reflex actions to which they do not commonly give rise. Now as this altered condition of the spinal cord, in whatever it consists, is brought into action by exciting causes of very unequal power, it is only reasonable to suppose that it varies greatly in degree, if not in kind, the morbid susceptibility of the cord, whereby it is made to play its part in the phenomena of tetanus, being greatest where the exciting cause is least severe. And farther, it is highly probable that this morbid condition of the cord may attain such an excess as to give rise to tetanus independently of any special exciting cause, any greater irritation than arises in the ordinary current of life, and in that case we have the centric tetanus of Dr. Hall. All this, we say, is highly probable, but has not received, and cannot receive, the same amount of evidence in its support as if the material change in the cord from which tetanus springs were known, and had been shown to exist in these several cases. There are few examples of tetanus in which there is satisfactory evidence of the inflammation of substance of the cord, but many in which its presence is disproved, so that it cannot be to inflammation that the essential change in the cord is due. We conceive that inflammation of the membranes of the cord, if producing tetanus, would do so in the same manner as inflammation of other more distant serous textures has been known to do, — that is, as an exciting cause.

To say that the changes which we believe the cord to have undergone are molecular, or that they are analogous to those which may take place in a bar of soft iron under the influence of galvanism, is to adduce an obvious comparison, the justice of which it is not easy to disprove, but which it is still more difficult to establish. One thing seems plain, — namely, that the incident irritations, which are esteemed the exciting cause of the diseases, do in the first instance produce some modification in the state of the cord, which their continued operation may bring into action, but which remains efficient for evil independently of their continuance. Since it appears to be a general law, that when tetanic irritation is once fully excited in the medulla, so as to be manifested by spasmodic contractions of the muscles, the disease is independent of the exciting cause, and does not cease on its removal.

Dr. Wilson, in his Essay on Spasm, has advocated a theory different from that just explained, conceiving that it is upon changes impressed upon the blood that the phenomena of tetanus depend. The production of a malady of an almost identical character by the introduction into the system of substances containing strychnia (the active principle of nux vomica), which is believed to enter the circulation by absorption, and so to be mixed and carried on with the blood, affords the strongest argument that can be adduced in favour of this view. The fact that half a grain of strychnia has within an hour produced death in an adult, with all the symptoms of the most violent tetanus, affords perhaps a presumption quite as strong on the side of alteration of the blood as the source of the disease as any experiments on animals in illustration of the reflex function of the spinal marrow can in favour of its being of an excito-motory nature. Nevertheless, the latter explanation, as suggested by Dr. M. Hall, to which we have given the first place in our description of its pathology, we believe to be that generally adopted by medical men.

So close is the resemblance between the symptoms of poisoning with strychnia, or substances containing it, that to distinguish them is sometimes a matter of difficult diagnosis. "The symptoms produced by strychnia," writes Dr. Taylor, in his work on Poisons, "very much resemble those of tetanus; but, in the latter, they are more slowly formed, and can only be coincidently connected with the taking of some kind of solid or liquid. Death is a much more rapid effect of the poison than of the disease." The occurrence of some recent wound or injury will assist us in recognising cases of the traumatic variety which, in the severity of their symptoms and the rapidity of their course, most nearly resemble those of poisoning; and the coincidence of exposure to cold would further strengthen this conclusion. Idiopathic tetanus, in which the first of these exciting causes is wanting, may be distinguished, in temperate climates at least, by its milder nature and more protracted duration. Death in examples of poisoning takes place within two hours of the appearance of symptoms where the result is fatal; and recovery is rapid where the patient is so fortunate as to escape. It is sufficiently evident that the treatment of a disease, the intimate nature of which is so little understood, must be in great measure empirical; and the difficulty of estimating the relative merits of different plans or medicines is well shown by a remark of Mr. Wilmot, in a paper published in the Dublin Quarterly Journal of Science for August, 1848, to the effect that "the testimony of all practitioners goes to establish the fact, that acute traumatic cases of tetanus are speedily fatal; while the idiopathic (except the very acute cases of tropical climates) and chronic traumatic varieties of the disease recover under the most opposite plans of treatment."

On being applied to for advice, the practitioner should endeavour in the first place to find out the cause which has given rise to the disease. If supposed to proceed from a wound or puncture, he ought carefully to examine the injured part, and to extract, as quickly as possible, any extraneous body that may have lodged therein, and excited irritation, taking care at the same time to dilate or freely lay open the wound.

These steps being taken, it may possibly be attended with some advantage to pour a small quantity of a strong solution of opium into the wound, dressing it afterwards with a little lint dipped in the same, and laying a pledget spread with some digestive ointment over it, and an emollient poultice at top. Every time the dressings are renewed, which should be twice or thrice a-day, the wound is again to be wetted with the solution.

The partial division of a nerve being sometimes supposed to occasion tetanic affections, the practitioner ought, when this is suspected to be the case, to make a deep incision into the part which has been injured, so as to divide the tendinous and nervous fibres entirely; after which he should adopt the mode of treatment that has just been recommended.

The only rational objects to be pursued in our management of the wound are to remove any existing source of irritation, and to palliate the effects of its presence by soothing applications. Most surgeons will agree with Mr. Curling that there is no need to discuss the propriety of using the actual cautery and other stimulating means to restore the suppurative process or a healthy action, since such barbarous treatment is not sanctioned by experience of its utility, and at the present day is most deservedly discarded from practice.

When we fail in, or despair of, removing the irritation in the wound itself by such means as have been just adverted to, the question arises whether any method is open to us of arresting its influence upon the system; and with this intent the division of the trunk of the nerve, whose branches go to the seat of injury at some distance from the injury itself, has been proposed and practised. This operation, where it can be easily and promptly performed, and at the same time so completely as entirely to separate all nervous connection between the wounded part and spinal marrow, seems deserving of a further trial than it has yet received.

A bold expedient for the removal of the offending part consists in the amputation of the injured limb; but, although this measure has been resorted to by very eminent surgeons, Mr. Curling thinks it only justifiable after a severe injury of the extremities, as a compound fracture or extensive laceration, as soon as there is the slightest indication of spasm. M. Roux (of Cherbourg) arrives at the conclusion that it is not usually a curative means in tetanus, but that it will probably be of service when the disease supervenes on irregular wounds complicated with undetected foreign bodies, and with laceration of nerves. Mr. Wilmot observes, that experience disproves its utility. "Although," says Mr. B. Cooper, in his Lectures on Surgery, "there are recorded cases of persons having recovered where the amputation of limbs has been performed after tetanic symptoms had commenced, and where they have yielded upon the division of wounded nerves; still these operations have so frequently failed that had a true statistical account been kept, I suspect but little more can be said for surgical than for medical treatment when once the disease is developed in an acute form." (Med. Gazette, vol. ii. 1847, p. 226.)

In the treatment of this disease purgatives are demanded at the outset, in order to remove from the intestinal canal worms and offensive contents which may be the exciting causes of the so-called idiopathic variety and sources of aggravation in the traumatic form. Moreover, they tend to produce a state favouring the absorption, and therefore the action of those remedies which more immediately influence the spasmodic contractions. Castor oil, oil of turpentine, and Croton oil are the purgatives most in use, and the last of these, on account of its great power and small bulk, is probably the best of all. A single drop placed on sugar may be put on the tongue, and washed down with any mild drink; the same dose being repeated every hour till the desired result is obtained; or its acrid properties may be diminished by mixing the same quantity with five or six grains of carbonate of magnesia, and diffusing it by means of mucilage in half an ounce of simple or aromatic water. Oil of turpentine, if given by the mouth, is best employed in combination with castor oil, an ounce of each being administered together, and the same dose repeated till free evacuations are procured. The enema terebinthinæ or colocynthidis of the London Pharmacopœia may be employed either as an adjuvant to purgatives given by the mouth or independently of them. We should, however, only trust to clysters by themselves when the difficulty of swallowing precludes the exhibition of cathartics by the mouth.

Blood-letting and mercury are remedies frequently resorted to; and it is not to be denied that their employment may sometimes have been beneficial. Cases have occurred in which the establishment of salivation has been followed by marked abatement of the symptoms and speedy convalescence; and other cases in which no improvement of the disease has attended the mercurial action, while the effects of the medicine itself were a source of much additional distress to the patient. We have already expressed the opinion that tetanus is not essentially a disease of an inflammatory character; that is to say, that the peculiar condition of the spinal cord, which makes it the medium through which the tetanic spasms are excited, is not dependent on inflammation. Yet the incident irritation by which the susceptibility of the cord is brought into play may be, and often is, inflammatory, as where the pleura and pericardium are thus affected, as in a case published by Dr. Bright, in the 22nd volume of the Medico-Chirurgical Transactions; in many instances of the traumatic disease, and in those rare cases in which the substance or membranes of the brain or spinal marrow have suffered inflammation as a consequence of some direct blow or injury. Now it is not in all of these cases that blood-letting and mercury are likely to do good, for there are many conditions consequent upon wounds or injuries which are considered inflammatory, yet are not likely to be benefited by these means; so that, in resorting to venesection and mercurials, we can only take as our guide the recognition of some local inflammation for the cure of which they might, with propriety, be resorted to under ordinary circumstances. This appears to us the best rule that can be suggested for our guidance, the tetanic condition alone affording no warrant for their employment. The difficulty of bringing patients affected with tetanus under the influence of mercury is generally admitted; and where the nature of the case justifies this expedient, besides rubbing in mercurial ointment, the patient may be placed naked in a sheet smeared over with that substance, as recommended by Mr. Wilmot, care being taken that excessive salivation be not induced.

Mercurialization in the present day seems to have far fewer advocates than venesection. In favour of this last, very high recent authorities (Drs. Craigie and Watson) might be adduced, as well as several of older date. Our experience, however, of the most successful treatment of other spasmodic maladies — as of hysteria, chorea, and epilepsy—has convinced us that blood-letting must be generally inappropriate in this; and modern practice, as gathered from published cases, has seemed to indicate an increasing confidence in supporting and stimulating, rather than in depleting or antiphlogistic measures.

We find in Mr. B. B. Cooper an advocate of counter-irritation; thus he says that blisters, setons, opium, and purgatives promise the best effects; yet in his lecture, in which these words occur, he has adduced no example of their successful employment. He mentions, indeed, a case in which sixteen hours after the application of a blister along the spine all the symptoms had subsided, but goes on to say that his triumph was of short duration; for while the patient turned in bed, that his back might be dressed, he was seized with spasm, and died in an instant. Mr. Curling says of counter-irritation, either over the affected muscles or in the course of the spine, that it is of no service unless the disease be inflammatory, in which case benefit may, perhaps, result from its application along the course of the spine. Dr. Todd proposes the application of ice to this part.

Opium is the medicine which has been employed with the best effect in cases of tetanus; but it should always be given in moderate doses at first, and so be increased gradually. In administering opium in this disease, the attention must, however, be directed to the effect that it produces on the patient, and not to the quantity which is taken, as many cases are on record where an ounce of it in substance has been given in the course of twenty-four hours, the spasms having been very frequent and violent.

By many it has been supposed, that joining it with musk, camphor, and æther, has greatly added to its effect. A combination of these medicines (as in the formulæ below) [*] had therefore best be used, taking care to increase the quantity of opium in each succeeding dose. The good effects of opium combined with James's powder, as also with ipecacuanha, in some cases of tetanus arising from wounds, are attested by Dr. Latham, in the 4th volume of the Medical Transactions of the London College of Physicians.

Giving the mild alkali internally, and administering opium at the same time in alternate doses, together with the use of a hot bath impregnated with potass and a few ounces of quick-lime, is a mode of treatment much recommended by Dr. Stutz, of Suabia, in tetanus and trismus traumaticus.[†]

An alternate internal use of opium and subcarbonate of potass is said to have been employed in the hospitals of Germany among the wounded soldiers, in the late war, with a most happy effect. The remedy is therefore worthy of our attention in tetanic affections.

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[*] ℞ Moschi, gr. x.
Spirit. Cinnam. f. ʒij.
Mistur. Camphoræ, f. ℥j.
Tinct. Opii, ♏xxvj. M.

Ft. haustus, 3tiâ vel 4tâ horâ sumendus.

Vel,

℞ Misturæ Camphoræ, f. ℥vjss.

Spirit. Æther. C. f. ℥ss.

Tinct. Opii, f. ʒij. M.
Ft. mistura, cujus sit dosis cochlearia duo magna tertiis horis.

[*] Take Musk, ten grains.
Spirit of Cinnamon, two drachms.
Camphor Mixture, one ounce.
Tincture of Opium, twenty-six minims.
Mix them for a draught, to be taken every third or fourth hour.

Or,

Take Camphor Mixture, six ounces and a half.
Compound Spirit of Æther, half an ounce.
Tincture of Opium, two drachms.
Of this mixture the dose may be two table-spoonfuls every three hours.

[†] See Medical and Physical Journal, vol. iii. p. 572., and vol. v. p. 472.

When the patient loses the power of deglutition, opium is then to be administered in clysters.

Under such circumstances, besides giving opium internally, we may likewise employ it externally, by frequently rubbing the parts most affected by spasm with equal parts of the linimentum saponis and tinctura opii, or with the ointments prescribed below.*

Dr. Moseley asserts, that opiates applied externally are not of the smallest utility either in the prevention or cure of tetanus. In this I must beg leave to differ from him, as, during my practice in the West Indies, I met with many instances where the most evident advantages were derived by using it in this way.

That in numerous instances of the worst forms of tetanus opium is quite ineffectual for relief, is a truth that must be at once admitted. Enormous quantities have been administered, and the greater portion has sometimes been found undissolved and unacted upon in the stomach, giving rise to the opinion that the system had become insensible to the ordinary effects of the drug; yet even where these have been produced, benefit has not uniformly accompanied them. Mr. Wilmot at least tells us that in many cases the specific effect of opium on the brain is produced without the least improvement in the tetanic symptoms being observable, and that his own father had related a case in which apoplexy occurred from the use of opium in tetanus, and that still the disease was in no way influenced. Opium in various forms, and in conjunction with other remedies, was employed in 84 of the 128 cases collected by Mr. Curling, and of these 45 recovered: 10, however, of the examples of recovery occurred in females. This table shows that in the whole 128 cases the recoveries were 58, or at the rate of 45·3 per cent.: that in the 84 treated with more or less opium they were 45, or 53·5 per cent., while in those in which no opium was given, amounting to 44, the recoveries were only 13, or not quite 30 per cent. Now these results seem to us quite opposed to the author's statement that the ample trial which it has had, both in small and large doses frequently repeated, has tended to diminish the confidence of practitioners in its efficacy.

The salts of morphia have been far less extensively tried than the various preparations of opium; and we are not aware that the former are entitled to any preference over the latter. Acetate of morphia has been chiefly used, made into an ointment with lard, and applied to a surface denuded of its cuticle: in one instance of traumatic tetanus two grains in powder were sprinkled on the skin, deprived of its cuticle, by ammonia, and the patient recovered under the continuance of this application. (Brit. and For. Med. Review, v. 1838, p. 230.) Of tobacco used in injection, Mr. Curling speaks very favourably, considering it the best remedy that we at present possess, and one which will generally be found capable of diminishing the severity of the acute disease, and often of subduing it altogether. The doses (as he mentions) must of course be regulated by the age, habits, and constitution of the patient, who during its use must be supported by a nourishing diet, tonics, wine, and other stimulants. The carbonate of ammonia, in particular, is well adapted to counteract the extreme prostration sometimes induced. At the commencement a scruple of the tobacco leaf infused in six or eight ounces of water will be enough for an injection, which must be repeated of equal or increased strength according to its effects. When these are sufficiently powerful there is an intermission of spasm, and a return of the power of swallowing, of which we should avail ourselves for the administration of nourishment and stimulants.

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* ℞ Opii Pulv. Subtilis, ʒj.
Camphoræ, gr. xv.
Adipis præparat. ℥ss. M.
Ft. unguentum.
Vel,
℞ Adipis Præparat. ℥j.
Olei Succin. f. ℥ss.
Opii Pulverisat. ʒij. M.

* Take Opium, reduced to a very fine powder, one drachm.
Camphor, fifteen grains.
Prepared Lard, half an ounce.
Mix them as an ointment.
Or,
Take Prepared Lard, one ounce.
Oil of Amber, half an ounce.
Opium, pulverised, two drachms.
Mix them.

A writer in the British and Foreign Medical Review for July 1837, in noticing the successful use of this remedy by M. Cavenue in Martinique, observes that, although already employed in this disease, it is less known and appreciated than it deserves to be. Mr. B. B. Cooper, however, in his recent lectures, places this drug with several others, of which he says no one is to be preferred to the other; and while he thinks that medicine has done little for the cure of this disease, he places surgical operation—as amputation or the division of nerves—in the same category. Those who employ tobacco should remember that it is powerful to kill as well as to cure. The discovery of the powerful influence of the vapours of æther and chloroform in annihilating sensation, in relaxing the contractions of voluntary muscles, and producing an almost deathlike calm, has caused these agents to be resorted to in various diseases of the nervous system, and especially in those of a spasmodic character. Although numerous apparatuses of a more or less complex construction have been devised for the inhalation of these vapours, we are not aware that they deserve any preference over the simple method which we have frequently seen successfully adopted by Mr. Samuel Burch, of the London Hospital. His only instrument is a large square piece of the close and strong blotting or filtering paper in common use, somewhat larger than a page of letter paper. This is folded first through the middle parallel to the sides, and again doubled so as to form a square of four layers, the size of which is one-fourth of the original square. On separating one of the outer layers from the other three, by inserting the hand, a cavity is formed, into the bottom of which from half a drachm to a drachm of æther or chloroform may be dropped, and the paper thus opened is placed over the face, the nose and mouth entering the hollow, while the two projecting angles lie upon the cheeks, the edge of the paper being in contact with the bridge of the nose and chin, or a little overlapping the latter. This cone of paper is generally covered with a handkerchief or towel, to prevent evaporation of the material employed from its outer surface, the whole being applied in such a way to the face that little or no air can enter from without. The patient is then desired to inspire deeply; and when he has done so for a few times, or for a period varying from twenty seconds to a minute or more, the desired effect will be apparent in the relaxation of the muscles, in the absence of sensation, and generally in the loss of sensibility which succeeds. As soon as this state of apparent fainting, of lifelessness or unconsciousness comes on, the paper should at once be removed altogether, and the patient allowed to breathe freely the pure air. The state of relaxation, or unconsciousness, is generally only of short duration; and where it is desirable to maintain the condition of anæsthesia, a fresh inspiration, with a smaller quantity of the fluid, must be resorted to at such intervals as are indicated by the state of the patient. The operator should, however, always cause an assistant to feel the pulse during the inhalation, and should at once stop the proceeding if there be any alarming sinking or intermission.

The vapour of æther has been tried by Mr. B. Cooper, in the case of a lad fifteen years of age, who was attacked with tetanus on the eleventh day after his hand had been jammed between two cog-wheels, and who sank under the malady in about seven days. In this instance there was nothing peculiar to account for the failure of the remedy, which was perseveringly employed, unless it be a bulbous enlargement at the extremity of a branch of the spinal nerve, which was traced to the wound. Mr. Cooper's impression as to the remedy seems to have been unfavourable. M. Roux of Cherbourg, in a paper published in the Medical Gazette of September, 1848, tells us that recovery from idiopathic tetanus has already resulted from the use of æther or chloroform in cases treated by MM. Petit, Mignot, and Ledru. Traumatic tetanus, he adds, has already yielded several times to anæsthetic agents, since by these means Pertusio and T. Hopgood have obtained successful results; but, on other occasions, chloroform and æther have proved unserviceable, as in the cases of MM. Velpeau and Tronneau. In the same paper is related a case of tetanus in a man, consequent on a very severe injury to the leg, in which, after the accession of trismus, the limb was amputated while the patient was under the influence of chloroform. But, though the inhalation of chloroform was repeated five times in one day, and that of æther six times on the next, the relief obtained was only momentary, and death occurred in four days. Æther or chloroform in vapour may be used as an injection, by placing some in a bladder, with a pipe attached to it, and surrounding it with hot flannel. It was tried at first in this manner in Mr. Cooper's case; but afterwards inhaled by the lungs.

The little exact experience hitherto obtained regarding the actual merits of these two agents as remedies in tetanus has induced us to make mention of them as worthy of further trial, and to describe the modes in which they may be used; but we confess ourselves little sanguine as to the result.

In the year 1839, Dr. O. Shaughnessy published, in Calcutta, a small volume on the preparations of Indian hemp (*Cannabis Indica*), and their utility in the treatment of tetanus and other convulsive diseases. The high reputation of the author, and his notice of ten recoveries under the use of this medicine out of fourteen examples of traumatic tetanus, caused the introduction of this new drug to be hailed with eager expectation. The resinous extract, obtained by boiling the dried tops of the plant in spirit (sp. gr. ·835) until all the resin is dissolved, and afterwards evaporating over boiling water, was administered in the dose of two or three grains every third or second hour, and, as we have seen, with most encouraging results. We regret to say that the trials of this substance in this country have not realised the hopes of it which were awakened. We know of one case of its failure at the London Hospital, in which the hemp was furnished, and its administration watched, by Dr. O. Shaughnessy himself. Mr. Wilmot observes of it, that the records of cases in this country do not entitle it to much merit, while Mr. B. Cooper does not even mention it. Nevertheless, in the dearth of our resources, this powerful anodyne may deserve a further trial.

The extract of belladonna, in doses of one sixth of a grain, frequently repeated, is another anodyne which has in several instances been resorted to; but in those which have fallen under our notice, it has always been abandoned for other means. Hydrocyanic acid has as yet achieved no triumphs in this disease.

The use of the cold bath, or rather of the affusion of cold water to the extent of almost extinguishing vitality, has been found in some instances to produce a most powerful sedative influence; and there are examples of recovery under its use in severe cases of the traumatic disease. But there are a few also in which instantaneous death has followed the plunge into the cold bath; and to some patients, notwithstanding the benefit derived from its use, the repetition of the douche has been scarcely tolerable. Mr. Curling says, that, with the exception of tobacco, he knows of no remedy so well adapted to produce an impression on the nervous system of power adequate to control the severe spasms of the disease as cold affusion. He believes that, even in the most aggravated cases, by boldly persevering in the application of it until syncope or extreme depression of the vital powers is produced, the spasms may be completely removed; but that unless it be practised with boldness and perseverance, it had better never be resorted to.

The utmost care is necessary not to carry it so far as to take away all power of reaction; and it may be desirable to administer brandy or diffusible stimulus during the operation. Still cold affusion, on account either of the peril attending it, or of the dread with which it inspires patients, has not come into very general use.

To procure a relaxation of the spasms, it has been customary to make use of a warm bath in conjunction with anodyne frictions; and occasionally a clyster of tobacco has been administered about twice a day with success: but in all the instances of a recovery from tetanus which have taken place under my care, the cold bath was substituted instead of the warm. These, however, were cases (one excepted) which arose from exposures to cold. The plan generally pursued was, to throw a large pailful of cold water every two hours on the patient, after which he was wiped dry, and again put into bed; an opiate draught, similar to what has been advised, was then given to him, and the parts most affected were well rubbed with a strong anodyne liniment. When he was so far recovered as to be able to swallow with facility, the cinchona bark was also given to him, with a very free allowance of wine; which course was pursued for a considerable time after the spasmodic affection had ceased. The effect of this moderate affusion is totally different from that just spoken of.

In traumatic tetanus, a warm bath seems entitled to a decided preference over a cold one. Bathing in water heated to a temperature of from 87 to 97 degrees, Dr. Currie says, allays the violent action of the heart and arteries, and soothes the system; it reduces the pulse in frequency, moderates and equalises vascular action, relaxes the muscular fibres, removes rigidity, and disembarrasses the organs of respiration. Recognising such virtues in water raised to the warm temperature, we may estimate its application in the form of a bath as at least a soothing remedy for the sufferings which a genuine paroxysm of tetanus never fails to inflict.

Having spoken of several of the most powerful means of producing a narcotic or sedative effect, it appears unnecessary to enter into a detail of all the remedies of a like character which have been occasionally resorted to, since we know of none which has proved of any surpassing efficacy. There is one agent, however, recommended on scientific grounds, though not as yet successfully employed, of which we must give a brief notice. Professor Matteucci, in his lectures on the Physical Phenomena of Living Beings, at p. 275. of the English edition, suggests the use of electricity in this malady. A current (he there remarks) which circulates by jerks in animals during a certain time produces tetanic convulsions; the direct current, if continued sufficiently long, produces, on the contrary, paralysis. From this it was concluded that the continued passage of the latter in a tetanised limb would destroy this condition, by producing a state more or less allied to paralysis. In operating on frogs, which have been tetanised by narcotics or hydrocyanic acid, we observed a fit of tetanus cease under the influence of the prolonged passage of a direct current. In a case of traumatic tetanus, during the passage of the current the patient experienced no violent convulsions; he was able to open and shut his mouth, and circulation and perspiration appeared to be re-established. Unfortunately this amendment did not continue long, the disease being occasioned and kept up by the introduction of foreign bodies into the muscles of the leg.

Other agents for quieting the excitability of the nervous system have been sought in medicines of a tonic power. Thus the sesquioxide of iron has been recommended by Dr. Elliotson, and seems to have produced some benefit in his hands; two severe cases having recovered under its use. In one of his cases it failed. He employed it in doses of half an ounce, mixed in twice its weight of treacle, and diffused in strong beef tea to facilitate the swallowing it, repeated every two or three hours. It is probable that smaller doses — as from one to two drachms — would be equally effectual. We can, however, hardly hope to control the rapid progress of the most acute and dangerous cases by a medicine which, in the instances where it was employed with best effect, appeared to require two or three days to exert its influence. Mr. B. Cooper mentions a fatal example of the traumatic variety, wherein a scruple of quinine at first was ordered thrice a day, and subsequently hydrocyanic acid, yet death occurred in three days.

It seems needless to prolong the list of medicines vaunted as remedies for this disease, a more extended trial of which has destroyed all their claims to confidence. Digitalis and colchicum are among these, having won for themselves no abiding reputation.

We believe that we may still say with Sir James M'Gregor, that the method of cure is yet to be discovered.

In the Transactions of the College of Physicians of Philadelphia, Vol. I. Part I., is inserted a case of tetanus, from the extraction of two teeth, which was successfully treated by Dr. Rush, by a use of mercury and wine; and others are elsewhere recorded on indisputable authorities.

In the New York Medical Repository for 1779, is mentioned another case of tetanus arising from the puncture of a pin in the wrist, which was successfully treated by Dr. Hosack with wine (Madeira) *alone;* the woman having taken three gallons in a few days, in doses of a wine-glassful (containing about two ounces) every hour. It seems necessary to observe, however, that in this case the wound was freely pencilled with lunar caustic, after which it was covered with an emollient poultice.

Throughout the whole course of all tetanic affections the patient's strength is to be supported by wine, mixed with such things as he can easily swallow; and where this power ceases, nutritive clysters must be substituted.

The trismus nascentium is a species of tetanus frequently occurring in warm climates to infants a few days after birth; but this is inserted among the diseases peculiar to them.

Dr. James Clark, in his Treatise on West India Diseases, informs us, that, being unable to cure the symptomatic tetanus, he endeavoured to prevent it; and for this purpose, after wounds and punctures, he gave two or three grains of calomel twice a-day till a gentle salivation came on, and he pursued the same plan after operations. Out of fifteen patients, after amputation, that were treated in this way, only one died, and he was in so irritable a state before, that bad consequences were dreaded. In those who had been wounded or punctured, the success was greater; two only having been lost out of a great number since this mode of practice was begun.

To prevent tetanic affections from arising after wounds and chirurgical operations, I understand it is almost a universal practice on board ships of war to mix tincture of opium with the dressings, and that since this practice has been adopted these complaints seldom occur. As a prophylactic, I should be much inclined to adopt this mode of treatment in preference to that proposed by Dr. Clark.

SINGULTUS, OR HICCUP.

Hiccups are a spasmodic affection of the stomach and diaphragm, arising from some peculiar irritation. They are in general symptomatic, but in some instances they appear as a primary disease.

When they are idiopathic, they usually arise from an error in diet or from an acidity in the stomach. When symptomatic, they either come on towards the termination of some acute disease, attend on injuries done to the stomach and other viscera, or prevail as an affection attendant on hysteria.

Hiccups prevailing as a primary affection, are never attended with danger, and are in general easily removed; but when they arise in any acute disorder, or after a mortification has taken place, they may always be looked upon as the forerunners of death.

The appearances on dissection will depend entirely on the disease of which they have appeared as a symptom.

A common hiccup is often removed by taking a few small draughts of cold water in quick succession, or by a sudden excitement of some degree of fear or surprise. When these simple means do not answer, recourse must be had to antispasmodics, the most useful of which for this disease seem to be æther, musk, and opium. These may either be combined together, or be given separately.

In the accidental hiccup of youth or of very old people, a pretty certain remedy is a small quantity of any powerful acid, such as a tea-spoonful of vinegar or lemon-juice or a little peppermint water acidulated with a few drops of sulphuric acid.

When hiccups prove violent as well as obstinate, the application of a large plaster of Venice treacle to the patient's stomach sometimes affords relief; but should it fail, a blister may then be substituted.

Hiccups sometimes proceed from an acidity in the stomach, and hence it is that infants are very apt to be affected with them. When they arise from this cause, a little prepared chalk or magnesia joined with some carminative, such as the oleum anisi, will be the most proper medicine.

When hiccups arise at the close of any acute or malignant disease, or in consequence of a mortification, no advantage can be obtained from medicine or any other means whatever.

PERTUSSIS, OR HOOPING COUGH.

Pertussis is a convulsive cough, interrupted by a full and sonorous inspiration, and returning in fits that are usually terminated by a vomiting or expectoration. In its first stage it may be considered as a febrile disease.

Children are most commonly the subjects of pertussis, and it seems to depend on a specific contagion, which affects them in general but once in their life. I have said in general, because instances have occurred where the same person has been attacked with it a second time, although a contrary belief is entertained by the generality of practitioners. The disease being produced, the fits of coughing are often repeated without any evident cause; but in many cases the contagion may be considered as only giving the predisposition, and the frequency of the fits may depend upon various exciting causes, such as violent exercise, a full meal, the having taken food of difficult digestion, and irritation of the lungs by dust, smoke, or disagreeable odours. Emotions of the mind may likewise prove an exciting cause.

The returns of the fits are various. In mild cases they do not occur oftener than three or four times a-day; but in severe ones they make their attack every half hour or so: they do not, however, recur at regular intervals. The progress and duration of the disease are subject to great variety. In its mildest form it usually lasts two or three months, and when severe is not unfrequently protracted to five or six. Even after it has to all appearance ceased, its return has frequently been occasioned by some accidental exposure to cold.

Pertussis often prevails epidemically, but does not, in this respect, appear to be influenced by any particular season of the year. It has, however, been observed to be much milder in warm climates than in cold ones; and it would seem, in conformity to this law, that the disease is found to be more severe in this country during autumn and winter than during spring and summer. It arises generally from contagion, it is true; still it must be allowed that there is a principle independent of contagion capable of producing the complaint, and that this principle undoubtedly exists in the atmosphere, which it pervades to a certain extent; but what it is, and how formed, remains a curious subject for physical research.

Hooping cough, according to Dr. R. Williams, is a disease of modern origin, which has been traced back by Sprengel to the fifteenth century, but which first broke out in France, and was probably epidemic in Paris in 1810.

Dr. West, in his lectures on the Diseases of Infancy and Childhood, speaking of hooping cough, says, that in London it ranks fourth among the causes of death under five years of age; inflammation of the lungs, convulsions, and hydrocephalus being the only more fatal ailments. More than half of the cases of it occur in children before the completion of their third year. After the age of five years its frequency rapidly diminishes, and after ten it becomes so extremely rare, that out of 815 cases in which the patient's age was noticed, but seven were found in which it exceeded ten years. Age and sex, he goes on to say, exert an evident influence on the mortality of the disease as well as on its prevalence, both being greatest in early childhood, though hooping cough does not seem to be so formidable before the commencement of dentition, as it is while that process is going on. Female children are not only more liable to the affection, but it proves more fatal to them than to boys in the proportion of about three to two.

The proximate or immediate cause of pertussis seems to be a viscid matter or phlegm lodged upon the bronchia, trachea, and fauces, which sticks so close as to be expectorated with the greatest difficulty, and by its nature excites spasmodic coughing. Some have supposed it to be a morbid irritability of the stomach, with increased action of its mucous glands; but the affection of the stomach which takes place in the disease is clearly only of a secondary nature; so that this opinion must be erroneous.

The hooping cough usually comes on with an oppression of breathing, some degree of thirst, a quick pulse, and other slight febrile symptoms, which are succeeded by a more than ordinary disposition to sleep, hoarseness, cough, and difficulty of expectoration. These symptoms continue perhaps for a fortnight or more, at the end of which time the disease puts on its peculiar and characteristic form, and is now evident, as the cough becomes convulsive, and is attended with a peculiar sound, which has been named a hoop.

The first or catarrhal stage of hooping cough is of very various duration; Dr. West says, that in fifty-five cases he found its average length to be 12·7 days, while two days and thirty-five days were the extremes. There is no doubt that hooping cough may frequently be recognised with tolerable certainty many days before the characteristic hoop has been heard, by the suffocative and paroxysmal nature of the cough. And this paroxysmal cough may be observed from the commencement of the illness, or may appear intermediately between the catarrhal stage and the hoop, or possibly may be wanting altogether. It may be laid down as a general rule, says the author above quoted, that those cases in which the catarrhal stage is of long continuance, seldom become severe during their subsequent progress; and the same holds good with reference to the majority of those cases, in which the hoop does not come on until after the cough has for some time assumed a paroxysmal character. There are, however, some instances where the long duration of the paroxysmal, and suffocative character of the cough, unattended by any hoop, is a sign of the peculiar intensity of the disease rather than of its mildness.

When the sonorous inspiration has taken place, the coughing is again renewed, and continues in the same manner as before, till either a quantity of mucus is thrown up from the lungs, or the contents of the stomach are evacuated by vomiting. The fit is then terminated, and the patient remains free from any other for some time, and shortly afterwards returns to the amusements he was employed in before the accession of the fit, expresses a desire for food, and when it is given to him takes it greedily. In those cases, however, where the attack has been severe, he often seems much fatigued, makes quick inspirations, and is rather faint.

On the first coming on of the disease, there is little or no expectoration, or, if any, it consists only of thin mucus; and as long as this is the case, the fits of coughing are frequent and of considerable duration; but on the expectoration becoming free and copious, the fits of coughing are less frequent as well as of shorter continuance.

By the violence of coughing, the free transmission of blood through the lungs is somewhat interrupted, as likewise the free return of the blood from the head, which produces that turgescence and suffusion of the face which commonly attend the attack; and in some instances brings on a hæmorrhage either from the nose or ears.

The disease having arrived at its height usually continues for some weeks longer, and at length goes off gradually.

Although the hooping cough often proves tedious, and is liable to return with violence on any fresh exposure to cold, when not entirely removed, it nevertheless is seldom fatal, except to very young children, who are always likely to suffer more from it than those of a more advanced age. The danger seems, indeed, always to be in proportion to the youth of the person, and the degree of fever and difficulty of breathing which accompany the disease, as likewise the state of debility which prevails. When it attacks weakly children, or those of a scrofulous disposition, it is apt to prove severe and tedious, and therefore dangerous.

The complications of hooping cough are the chief, if not the only sources of danger in this disease. These are inflammatory affections of the lungs, and congestive, and sometimes inflammatory affections of the brain. It appears that the disease is also occasionally fatal in the paroxysms, in consequence of suffocation produced by the prolonged spasmodic closure of the glottis. In Dr. West's analysis of twenty-four fatal cases, we find death referred in equal numbers to the lungs and to the brain; and we may remark, that an observation of this table would lead to the result that mortality through the lungs is somewhat more delayed than that through the brain, since there are only three deaths within twenty-eight days from the occurrence of the hoop referred to the former, and seven to the latter source.

It has been known in some instances to terminate in apoplexy or suffocation. In some it lays the foundation for asthma, phthisis pulmonalis, or hydrocephalus. The hooping cough has also been known to terminate in marasmus: the child, after a continuance of the disease for a certain time, loses its appetite, rapidly emaciates, becomes hectic, and dies apparently from exhaustion. If the fits are put an end to by vomiting, it may be regarded as a favourable symptom, as may likewise the taking place of a moderate and free expectoration, or the ensuing of a slight hæmorrhage from the nose or ears.

Dissections of those who die of the hooping cough usually show that the organs of respiration have been affected, and particularly those parts which are the seat of catarrh; hence the mucous membranes of the trachea and bronchi are commonly found in a morbid state. In many instances the lungs have exhibited highly morbid appearances, the trachea and its ramifications bearing vestiges of recent inflammation, and the air-cells and the bronchi, near to their bifurcation, being filled with a whitish puriform mucus. In some instances the lungs have been found adhering to the pleura. When the disease has been long protracted, or has degenerated into pulmonary consumption, asthma, or visceral obstructions, the glands of the mesentery are found in a hard and enlarged state. In a few instances, serous effusion within the ventricles of the brain has been the morbid appearance met with.

Dr. West in speaking of the postmortem appearances observed in fatal cases of hooping cough says, I know of no morbid appearances peculiar to this disease. It is through the medium of the lungs or of the brain, that death takes place in nearly every case of fatal hooping cough, and almost all the structural lesions of importance are found in one or other of these organs. The vessels of the brain and its membranes are often found over-filled with blood, though these appearances are sometimes much less marked than might have been expected, and occasionally are altogether absent. Softening of the cerebral substance, or other indications of inflammatory action, are seldom met with; increased vascularity of the organ, with perhaps a small quantity of fluid in the ventricles, being almost the only morbid appearances in the encephalon.

It is but seldom that the lungs are found free from disease. There is often redness of the bronchial mucous membrane, and dilatation of these vessels. An emphysematous condition of the lung is also sometimes observed; and one remarkable appearance, first noticed by Dr. Alderson, is a collapsed condition of portions of the pulmonary tissue, which are destitute of air, and sink in water, yet admit readily of inflation; in which last particular, as well as in the presence of some degree of contraction, these carnified differ from hepatized lung. An important negative truth established is, that the disease is not dependent on an inflammatory condition of the pneumogastric nerves, since of sixty-three cases of fatal hooping cough, in which these nerves were subjected to examination, there were five only in which there was any sign of their being affected; and in these five cases there was no conclusive evidence of a diseased condition which had existed before death.

In the treatment of pertussis, we are, in its first or early stage, to moderate its violence and palliate the urgent symptoms; and at an advanced period to arrest its progress, and put a stop to it by suitable remedies, sooner, perhaps, than it would spontaneously have ceased.

In mild cases of hooping cough occurring in summer or in a warm climate, little active treatment is required. Many of these, in truth, are never brought under the care of the medical practitioner, but gradually getting well under the nostrums of parents or nurses. Among popular remedies salt of tartar (subcarbonate of potass) with cochineal are in much repute for internal administration, while the spine is rubbed with oil of amber. There is reason to believe that the alkali is of some service, and two or three grains of this dissolved in a teaspoonful of water, and sweetened with a little sugar may be given thrice a day to an infant under one year of age, and twice as much to one above that age. Of the virtues of the cochineal we know nothing, the oil of amber liniment is harmless, if not beneficial. A rather more active treatment, yet one adapted for mild cases, is that recommended by Dr. R. Williams. From ten to fifteen grains of Epsom salts with from ten to fifteen minims of syrup of poppies, with as much water as will make up a teaspoonful, may be given with the same frequency as before to a child of the first mentioned age, and a double dose to one of the latter. In administering narcotics, however, the extreme susceptibility of young children to their action must be borne in mind; they must be used with caution, and their effects carefully watched. If there be much pyrexia, from five to ten minims of ipecacuanha wine may be added to each dose of the mixture, and this may be replaced by as much acetum scillæ, or spirit of nitric æther when the febrile symptoms have abated. In more severe cases, where the shortness of breathing is considerable between the fits of coughing, we must resort to more powerful antiphlogistic measures. We have thought it generally advantageous to act rather freely on the bowels, with a view of relieving any irritation that might be propagated from loaded or distended bowels to the lungs, and of producing derivation both from these organs and the head. For this purpose we have given on alternate days one grain of calomel, with two or three of jalap in sugar, to babes of a few months of age, and have increased the dose for those somewhat older. At the same time we give a grain of powdered ipecacuanha with a little syrup and mucilage, and two or three grains of nitre thrice a day or oftener, making up the dose with water to the same measure as before. It has not occurred to us to find the endurance of ipecacuanha increase with the age of the patient, so that we are not in the habit of diminishing the quantity for the youngest, or increasing its amount for older children. We do not administer it with the specific intent of exciting vomiting, but we are indifferent to its producing that result occasionally, but we desire the dose to be somewhat diminished if it do so constantly. There is a remark of Dr. West's of much practical value. "Sometimes, he says, rather severe bronchitic symptoms, frequent short cough and considerable dyspnœa, precede the full development of the disease." "On the whole, however, these are not the cases which need excite our greatest solicitude; for the constitutional symptoms which are generally out of all proportion to the amount of local mischief usually subside in the course of a few days, and as the characteristic cough and hoop come on, all cause for anxiety disappear."

"Those cases," he goes on to say, "are in general much more serious in which the symptoms of bronchitis or pneumonia come on after the cough has assumed the characters of hooping cough. For a day or two, perhaps, a hoop has been heard accompanying the cough at intervals, and nothing has appeared to indicate that the attack will be unusually severe, when all the symptoms suddenly become very much aggravated; the skin grows hot; the respiration and pulse become very much hurried, and this increase in their frequency is permanent, though much greater at one time than another. The ear detects mucous râle through nearly the whole of both lungs; and on a deeper inspiration still smaller sounds are heard, for inflammation has attacked the minuter air tubes, and the case is one of hooping cough complicated with capillary bronchitis." Now these two classes of cases require to be accurately distinguished, while auscultation alone will furnish the means of doing so; in the first set, in which with much hurry of respiration, there are only slight or no abnormal sounds to be discovered, depletion by leeches or other means is not only unnecessary, but injurious; in the latter it may be sparingly and cautiously resorted to; yet even in these last the specific nature of the disease must not be forgotten, nor the child be much reduced through confidence in measures which even in simple pulmonary inflammation are little effectual for good. Medical men in the present day are for the most part aware that blood-letting is not available for the prevention of inflammation, that it may be pushed too far in attempting the cure of that condition when actually existing, and that it should be even more cautiously used in inflammation resulting from a specific continuous cause, or partaking of a specific character. In hooping cough the powers of ipecacuanha, and, if need be, of antimony also, in relieving inflammation, should be fairly tried before leeches are employed; and if all these means fail to give relief, the want of success will furnish an argument rather for a change in the plan of treatment, than for carrying it to an extreme degree. We repeat that heat of skin and hurried respiration must not be taken as evidences of the presence of pulmonary inflammation, since these may have arisen indirectly from influences primarily affecting the brain; if in the progress of the disorder such a state of things should supervene, there will be reason to suspect some commencing congestion within the head, and this suspicion will be confirmed, if at the same time there be a drawing of the thumbs into the palms of the hands, or rigidity of the great toes; if there be vomiting, independent of the effects, either of the fits of coughing or of nauseating medicine; if there be crowing inspiration, and sometimes even diarrhœa may have the same cause and import. In cases where such symptoms have not been prevented or relieved by the free use of purgative medicine, the application of two or three leeches behind the ears will often give marked relief, the affection of the brain being congestive rather than inflammatory, and hence more amenable to a moderate local abstraction of blood; but here we must remember how freely leech bites in young children bleed; and how injurious excessive loss of blood is to them, more especially when labouring under a disease partaking of a spasmodic character. Ne quid nimis —don't do too much—is a rule insisted upon by writers on this disease, and is especially worthy of attention in reference to depressing treatment, whether by blood-letting or antimonials; the latter medicine, on account of the greater prostration it produces, we employ far less frequently than ipecacuanha in the diseases of children. Protection from cold and wet, and the benefit of a warm and pure atmosphere, are matters of much importance to children suffering under this malady, and will require the more care on the part of parents and medical men in proportion as the weather is bleak and wet, and the tendency to inflammatory complication is more marked. The apartment in which the child lives by day should be kept at a uniform temperature of about 60°, and care should be taken that he be not chilled by a low temperature in his bed-room at night. Change of air, as from London to Kensington or Hammersmith, has in many instances been followed by rapid recovery under circumstances which were almost desperate, and in all cases probably accelerates the cure if resorted to when the disease is on the decline.

Where there is much difficulty in breathing, the application of a blister to the chest will be proper at the commencement of the disease; at least this practice has many advocates in its favour, while there are many dissentients also. One thing is certain, that the use of blisters in infants and young children requires great care, since, if their action be very severe in consequence of the activity of the ingredients, of the too large dimensions of the blister, or still more on account of its too long application, a sloughing of the skin is wont to arise, an accident which very few long survive. Another consideration which would make us hesitate in causing soreness of the skin with blisters or antimonial or other ointments is, the increase of pain thereby occasioned to the patient in the paroxysm of coughing while the skin continues thus unhealed and raw. We give a decided preference to milder irritants, and strongly contend for delay in the use of blisters, if not for their exclusion. Dr. R. Williams may be referred to on this subject: he quotes Desruelles to the effect that blisters and topical remedies generally do not abridge the duration of hooping-cough in any case, while in some they augment its intensity: while he gives Watt's testimony to the effect that he has not seen much advantage from blisters till after the violence of the disease has been subdued by other means. Dr. West says of blisters that, if in connection with the evidence of congestion of the brain, the cough be suffocative and the hoop suppressed, much good often results from their application. They must not, however, be suffered to remain more than four or six hours on the skin, nor are they to be kept open for fear of troublesome sores: and for the same reason irritation with tartar emetic ointment is not to be advised.

Some practitioners have recommended the lower region of the stomach and along the course of the spine to be rubbed very frequently with a stimulating embrocation[*], covering the part afterwards with flannel. Inhaling the steam of warm water, with an addition of vinegar or æther, twice or thrice a-day, may be of service as an auxiliary remedy.

A medicine composed of opium, ipecacuanha, and the carbonate of soda, is recommended by Dr. Pearson[†] to be given in pertussis, after the accumulated phlegm has been brought away by an antimonial emetic. He advises it in the following proportions to a child between one and two years, viz. one drop of the tincture of opium, five drops of ipecacuanha wine, and two grains of the carbonate of soda, which may be made up into a small draught with syrup and water, and be repeated every fourth hour for several days; taking care to remove costiveness, whenever it occurs, by submuriate of mercury and rhubarb. Dr. Pearson is of opinion, that without the soda the preparations of ipecacuanha and opium would not be equally efficacious, and was led to employ it by the sour smell of the slimy fluid brought up by vomiting; but he suspects that it has an influence beyond that of correcting acidity.

Bathing the feet frequently in warm water has been supposed to afford relief in many cases. A tepid bath is sometimes serviceable.

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[*] ℞ Liniment. Sapon, f. ℥ij.
Tinct. Cantharid.
Olii Terebinthinæ ā ℥ss. M.

ft. Embrocatio.

[*] Take Soap Liniment, two ounces.
Tincture of Cantharides,
Oil of Turpentine, of each half an ounce.
Mix them for an embrocation.

[†] See Medico-Chirurgical Transactions, art. 3.

The acetate of lead has been lately recommended in hooping cough, and is said to relieve the symptoms of the disease very speedily, without producing any bad effects on the stomach and bowels. It may be given in the formula inserted below.* The effects of this remedy should be carefully watched, and a tendency to constipation guarded against. We have administered it in considerable doses for many weeks without any inconvenience in cases where we have taken the precaution to act on the bowels on alternate days, or twice a week, with the sulphate of magnesia. As this expedient has not seemed to diminish the styptic or astringent action of the lead, we recommend it for the adoption of others. Alum has of late superseded lead in popularity; it may be given in doses of one or two grains or more according to the age.

Exciting a slight degree of strangury has been attended with a good effect in some instances of pertussis. A combination of tinctura cantharidis and tinctura camphoræ composita † may be used for this purpose, giving it in doses of about fifteen drops, repeated every three or four hours, until some slight effect of this nature is produced, when the dose may either be lessened, or be given at longer intervals. Its efficacy, most likely, is owing to the counter-irritation which it excites.

For obviating the fatal tendency of the disease, and putting it into a safe train, the remedies which have been advised are evidently the most proper; but in its second stage, where it may be considered as continuing from the power of habit alone, all danger and violence being over, we must alter the plan of treatment, and have recourse to antispasmodics and tonics.

Of the first class, musk, castor, assafœtida, oleum succini, camphor, hyoscyamus, and opium, have principally been used; but their effects seem rather doubtful; and as they are all nauseous medicines, particularly the first three, it may not be easy to persuade children to take them.

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* ℞ Plumbi Acetatis, gr. vj.—xij.
Acid Acetici diluti, ʒj.
Aq. Rosæ, f. ℥ij.
Syrup. Violæ, f. ʒij. M.
ft. Mistura. Capiat cochl. minimum. 4tâ vel 5tâ quâque horâ.

† ℞ Tinct. Camphoræ Compos. f. ℥j.
Cantharidis, f. ʒij.
Vel,
℞ Decoct. Cinchon. f. ℥iijss.
Tinct. Cantharidis, ♏xxx.
——— Camphor. Compos. f. ℥ss. M.
Capiat cochleare medium quartis horis.

* Take Acetate of Lead, six to twelve grains.
Dilute Acetic Acid, one drachm.
Rose Water, two ounces.
Syrup of Violets, two drachms.
Of this mixture a tea-spoonful may be taken every fourth or fifth hour.

† Take Compound Tincture of Camphor, one ounce.
Tincture of Cantharides, two drachms.
Or,
Take Decoction of Peruvian Bark, three ounces and a half.
Tincture of Cantharides, thirty minims.
Compound Tincture of Camphor, half an ounce.
Of this mixture let a dessert-spoonful be taken every four hours.

As regards the use of opium and narcotics generally, we conceive that they are of use rather in the uncomplicated and apyrexial form or stage of the disorder, than where there is reason to apprehend either congestion of the brain or inflammation of the lungs. They tend to lessen the irritability of the mucous membranes, and to diminish the frequency of the paroxysms of cough, to effect which is a great object, nevertheless they should not be so employed as to mark the symptoms of internal disease. Yet we do not mean to draw the line too absolutely so as to exclude their use on account of the presence of some amount of fever or difficulty of breathing. One grain of Dover's powder, or two drops of laudanum, or five or six of the compound tincture of camphor, may be added to any of the other medicines, whether simply cathartic or antiphlogistic, astringent or tonic, stimulant or antispasmodic, as determined by the condition of the patient rather than by the duration of the disease. The above may be taken as commencing doses for children about twelve months old, to be somewhat diminished or increased for less or greater ages; and to be carefully augmented if found insufficient. About a grain of extract of conium or hyoscyamus, or one-sixteenth to one-eighth of a grain of extract of belladonna, may be given instead, under the same circumstances, and with the same precautions.

Of hydrocyanic acid, Dr. R. Williams says, that it is certainly esteemed in the present day far beyond its value; an opinion in which we concur; yet Dr. West declares that, if the paroxysmal character of the cough be well marked, and the fits of frequent recurrence, but the child in other respects ails little, much benefit will accrue from the use of hydrocyanic acid. If may be given by itself, diffused in a little distilled water, and sweetened with a little syrup, and I usually begin with half a minim every six hours, for a child nine months old. The strength of the acid used is not here particularized, an important omission; and it is the uncertainty of the activity of the preparation actually obtained, which makes this acid and many extracts sometimes inert and sometimes dangerous. We have known, in our own practice, a single grain of extract of hemlock stop the hooping cough in a child about a year old, but with such symptoms of narcotism as would have made it dangerous to repeat it; and on the other hand, we have known repeated doses of larger amount produce little effect, either on the disorder or the constitution. Opiates have this practical advantage, that they are subject to less variation of strength than any other narcotics. Dr. West mentions symptoms of faintness, dizziness, or bewilderment, as sometimes arising after the administration of hydrocyanic acid, even where it has been taken for some days without any such effects. These symptoms would contraindicate its continuance; indeed, it is allowed by the author just referred to that the use of the acid is not to be persevered in if it do not give a very decided earnest of good within three or four days after its first exhibition. A few drops of sal volatile (say four or five) in a little sugared water would be the best remedy when the dizziness here spoken of was such as to create alarm, and cold also might be applied to the back of the head.

To take off the irritation from the mucous membrane, which is the principal seat of the disease, as well as to strengthen the general habit, it will be advisable to employ the bark of cinchona. It may be given joined with the other remedies; but as it is often impossible to persuade children to take it in substance, we must be content with substituting a decoction or strong infusion of it. Other tonics, such as the sulphate of quinine, and various preparations of steel, zinc, &c., may likewise be administered.

Arsenic has been recommended in pertussis by Mr. Simmons, of Manchester; and he asserts that it is attended with the most salutary effects, moderating the symptoms in a few days, and generally making a complete cure in the space of a fortnight. Dr. Ferriar, also, has recommended its use, and it may be tried in doses of one or two minims twice or thrice a day, either alone or in combination with other medicines. It is not, however, much in vogue in the present day.

It has been mentioned that in the advanced stage of pertussis marasmus sometimes ensues. In such cases, some benefit may probably be derived from small doses of the submuriate of mercury, conjoined with rhubarb, and the carbonate of soda.

A frequent change of air having always been found very serviceable in this disease, ought therefore to be advised. A flannel waistcoat should be worn by the patient, as, no doubt, it promotes absorption, and prevents the vicissitudes of the climate taking that effect on the skin which we know they do, acting thereby as an exciting cause of coughing.

Young children should lie with their heads and shoulders raised, and should be cautiously watched, that when the cough occurs they may be held up, so as to stand upon their feet, bending a little forward to guard against suffocation. Their diet should be light and of easy digestion, and mucilaginous diluents should be taken freely.

PYROSIS, OR WATER-BRASH.

A DISCHARGE of a thin, watery, or glairy fluid from the stomach, with eructations, and likewise a sense of burning heat in the epigastric region, are the chief characteristics of this disease.

It principally attacks those of a middle age, and more frequently affects females than males, particularly the unmarried. Those who are afflicted with fluor albus have been found to be much predisposed to it.

Being a disease not much known, and occurring but seldom, its causes have not been properly ascertained; but a low diet has been ascribed as being apt to give rise to it. The application of cold to the lower extremities, and distressing emotions of the mind, are likewise enumerated among its occasional causes.

The fits of pyrosis usually come on in the morning and forenoon, when the stomach is empty; and the first symptom which the patient perceives is a pain at the pit of the stomach, with a sense of constriction, as if it was drawn towards the back, and this is usually much increased by an erect posture. The pain, after proving severe, and continuing for some time, is followed by eructations and the discharge of a considerable quantity of a thin, watery fluid, sometimes of an acid taste, but often quite insipid. In some instances, however, it is very ropy, and of an appearance somewhat similar to the white of an egg, as happened in a case which some time ago came under my observation.

On a frequent repetition of the eructations and discharge, the fit at length goes off.

This disease rarely proves fatal, but is often tedious and troublesome to remove, being apt to recur occasionally a long time after it has once taken place.

For its cure no certain method has yet been proposed; but its fits are relieved by antispasmodics, such as æther, musk, castor, ammonia, oleum cajeputæ, opium, and the chewing or smoking of tobacco. In the intervals, the cinchona, with the acidum sulphuricum dilutum, chalybeates, and other tonics, will be advisable. To carry off the offending fluid or mucus, I am of opinion that we may employ mild purgatives* about twice a week with advantage. As adjuvants will be occasionally serviceable, magnesia and alkalies (especially ammonia) will correct acidity, and relieve the heartburn and other dyspeptic symptoms.

In pyrosis, as well as in gastrodynia and other like affections of the stomach, the oxide of bismuth has been found to afford much relief, interposing now and then gentle aperients. It appears to be a remedy recommended on the ground of safety as well as utility. An adult my take five grains of it with about a scruple of gum tragacanth three times a day.

A case of pyrosis, accompanied by gastrodynia of a year's standing, is recorded in Dr. Bardsley's Medical Reports, which was effectually removed by the oxide of bismuth in a very short time. The complaint had been so constant and severe as to prevent the patient from following his occupation as a weaver. The pain was fixed and dull, and the quantity of acid discharged from the stomach, in a watery form, was abundant. After clearing the stomach with an active emetic, the bowels were emptied by castor oil, and the patient then entered upon the bismuth. He took twenty grains of a powder consisting of one part of the oxide and five of gum tragacanth thrice a-day for the space of a week, and then increased the dose gradually to forty grains. A short time effected the removal of the pyrosis. The bismuth was then discontinued, and the cinchona with sulphuric acid substituted, which soon completed the cure. It appears likewise that some other cases of pyrosis, accompanied with spasmodic pains, were treated with uniform success. An obstinate case of the disease, accompanied by gastrodynia, lately came under my care, and was perfectly cured by the oxide of bismuth in conjunction with stomachic bitters.

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* ℞ Hydrargyri Submar. gr. ij.
Pulv. Antimon. gr. j.
Extract Colocynth. gr. x.
Syrup. Rhamni, q. s. M.
Fiant pilulæ iij. pro dos.

* Take Submuriate of Mercury, two grains.
Antimonial Powder, one grain.
Extract of Colocynth, ten grains.
Syrup of Buckthorn, a sufficiency to form a mass, which is to be made into three pills, and taken at once.

It is mentioned in Dr. Bailey's printed, but unpublished tracts, that he found a drachm of the tinct. benzoes composita mixed with mucilage and a little water, and taken three times a-day, of great service, although the condition of the stomach is frequently very little benefited by medicine.

Linnæus, by whom pyrosis seems first to have been noticed, recommends a use of the nux vomica: the dose is from ten grains to a scruple three times a day. We agree with Dr. Copland that in these large doses the remedy would soon prove worse than the disease. Dr. Pereira mentions from two to three grains as the commencing dose.

The case to which I have alluded in a preceding page, and in which there was a discharge of a ropy fluid, was at first treated with antispasmodics; but these being attended with no good effect, the physician who was called in advised the use of the sulphate of zinc combined with opium and the extract of cinchona bark, which seemed at first to be wonderfully efficacious; but the disease shortly afterwards returned, and the patient having lost confidence in the remedy, it was discontinued.

Unless, writes Dr. Copland, the chief causes of the disorder be removed—unless many of those who are the chief subjects of pyrosis live on more nutritious and digestible food, and are better protected from cold and wet than usually falls to their lots—no permanent advantage can be expected from treatment. The avoidance of long fasting is a measure to which he also attaches some preventive efficacy; and he concludes in the following words: "change to digestible and wholesome food, due promotion of the cutaneous functions, and an open state of the bowels, by means of stomachic or tonic aperients, are most deserving confidence, both for the cure and for the prevention of attacks of this complaint, which, if otherwise treated, will always prove most obstinate."

ANGINA PECTORIS. NEURALGIA OF THE HEART. SPASM OF THE HEART.

This disorder is recognised with certainty only by its symptoms during life, and cannot, independently of these, be proved to have existed by the changes discovered in the body after death. Its essence is as yet matter of conjecture.

Dr. P. Latham, the most recent writer on the subject, gives the following definition of it: —

"Pain of extreme severity passing through the chest from the sternum to the spine, arising suddenly and ceasing suddenly, and accompanied, while it lasts, with a feeling of approaching death."

The disease occurs in paroxysms. The patient enjoys, in general, the appearance, and much of the reality of health during the intervals, which may be prolonged for several weeks or months; their length depending upon avoidance of the exciting causes of the attacks. Now although those who have once suffered severely in this way are ever after liable to sudden death, yet, in the majority of instances, this event has been postponed for years. The author just quoted has, however, adduced three examples in which the periods, intervening between the first attack and that which proved fatal, were brief beyond former precedent. In one of these death occurred within a fortnight, in another in ten days, and in the case of the lamented Dr. Arnold, repeated attacks within the short space of three hours closed a brilliant career of great public usefulness.

We will review the symptoms of the attacks a little more in detail, and first speak of the pain. This may pass through the lower, or middle or upper part of the sternum; it seems by preference to tend to the left side, towards the left blade bone, and in succeeding attacks, if not at first, it shoots down the arm half way to the elbow, or as low as the elbow, or even to the tips of the fingers. This may occur, too, in both arms at once, or less frequently in the right alone. According to Dr. Hope it is not unusual for it to exist at the same time in the left anterior part of the chest; and in females it affects the mammæ, rendering them very sensitive to the touch. The same author speaks of its spreading occasionally to both legs and arms. Dr. Heberden gives an example of the limitation of the pain to the left arm, there never having been any in the chest, in a man, in whom, nevertheless, in all other respects the course of the disease was that of angina pectoris. In acute attacks the pain is excruciating and intolerable.

Of the two elements of which the paroxysm consists, Dr. Latham remarks "that they are apt to vary proportionably to each other. The pain and the dying sensation may both be extreme; or, in different individuals, and in the same individuals at different times, the one may exceed the other. He has, however, more frequently found the dying sensation to surpass the pain, than the pain the dying sensation."

The sensation of dying, whatever its source or character, is not the result of difficulty of breathing. This symptom may be present as a complication, but it is not an essential part of the disease. Dr. Heberden, and Dr. P. Latham, the earliest and latest authors on the subject, are agreed in this; and Dr. Forbes, in his treatise, thus expresses himself. "In most cases the respiration is unimpeded, although the patient seems at times as if he were unable or afraid to breathe. At other times, and perhaps more generally, deep inspirations are made, and are aided by raising the arms and shoulders. Sometimes the breath is retained for a considerable time." Dr. Copland, however, makes difficulty of breathing a part of his definition, and Dr. Hope speaks of the presence of great pulmonary oppression, but in the midst of such an agony the breathlessness might often be apparent rather than real.

The pulse is very various in different cases. It is sometimes regular, and sometimes irregular; in one case frequent, in another slow; sometimes weak, sometimes strong; in most cases small and feeble, and at times it is imperceptible. In all cases where the paroxysm is severe, be its duration what it may, the distress and anguish are extreme, and are marked both by pallor of face and cold perspirations. The feelings, whatever they be, are such as to impress themselves permanently upon the mind of the sufferer, and to create an apprehension and alarm regarding these threatenings of death which are not easily effaced. The duration of the paroxysms is very different in different cases, and in the same case in different periods. Their continuance is generally short in proportion to their intensity. Life probably could hardly be sustained for more than a few minutes, where the attack comes on in its most urgent form. Such, at least, is the impression made upon the patient. The earlier paroxysms are, as a general rule, the shorter; yielding, for the most part, to the cessation of those bodily exertions which have produced them, and continuing frequently only for one or two minutes, or even less. Yet this rule is not without exception, since Dr. Heberden speaks of a first attack which lasted throughout the night; an indefinite term, but indicating a duration of some hours. In the progress of the disease, the fits are both more easily excited and more lingering. The following is Dr. P. Latham's conclusion regarding the length of the fits:—"In different individuals, and in the same individuals at different times, the period of its duration is apt to vary. It may come and go, and be all over in a minute, or it may last many minutes, even a quarter of an hour; or it may be protracted for half an hour or an hour." Dr. Heberden, as we have just seen, attributes a much longer continuance, in a particular instance, to a first fit; and says, that in one or two other cases the pain lasted some hours or even days.

In slight cases, and in the first stage of the disorder, the fit is brought on by going up hill, up stairs, or by walking at a quick pace after a hearty meal; but, as the disease advances or becomes more violent, the paroxysms are apt to be excited by certain passions of the mind, by repletion of the stomach, by walking, by riding on horseback or in a carriage, or by sneezing, coughing, speaking, or straining at stool. In some cases they attack the patient from two to four in the morning, or while sitting or standing, without any previous exertion or obvious cause.

In the first stage of the disease the uneasy sensation at the end of the sternum, with the other unpleasant symptoms which seemed to threaten a total suspension of life by a perseverance in exertion, usually go off upon the person's standing still or turning from the wind; but in a more advanced stage they do not so readily recede: the paroxysms make their attack in the night, they are much more violent, and in a few cases have continued for several days. Dr. P. Latham has given this estimate of the several exciting causes of the paroxysm. "Seldom at first can it be imputed to any obvious cause but undue bodily exertion; and seldom still, for a considerable period (perhaps for months, perhaps for years), can it be imputed to any thing beside this undue bodily exertion and sudden or strong mental emotion. If the patient be blessed with healthy digestive organs, and withal be habitually, from choice or from principle, careful and temperate in his diet, then, though the paroxysm continue to recur from these two causes, it is long before any other than these can be accused of any share in producing it. Mere indigestion has, in some rare instances, been the sole apparent cause conducing to the paroxysm."

In one instance recorded by Dr. Black the patient was able, by getting out of bed, fixing himself in his arm-chair, and concentrating his attention on some interesting kind of reading, to baffle the paroxysm, as he expressed it. In most cases, the eructation of a little wind from the stomach is observed to take place with relief of the symptoms and termination of the fit. If ordinary indigestion be allowed to be an occasional excitant of this malady, its connection with gout has been much more insisted upon. In some cases it has been observed, that when the gout openly declared itself the paroxysms of angina pectoris altogether disappeared; the one disorder appearing to take the place of and to supersede the other.

The subjects of this disorder in its more acute form are especially of the male sex, and it is observed most among those who have nearly reached, or who have exceeded, their fiftieth year. Thus Dr. Heberden, among about one hundred sufferers from this complaint, reckoned only three females and one boy of twelve years of age. All the rest he mentions as having approached or passed their fiftieth year. And Dr. Forbes, in his analysis of eighty-eight cases, numbers only eight women, and twelve patients below their fiftieth year. The last-named author, however, conceives that of cases of a milder character the number occurring in women would nearly equal that found amongst men.

What now are the organic changes which death reveals to us in a disease which, after repeated threatenings in the course of months or more, often years, puts a sudden period to existence? We are wrong in calling death sudden in cases of this kind, if we take into account the many warnings of danger which have preceded it. Yet it appears sudden, and must be esteemed so if we regard the rapidity of the transition from the exercise of the ordinary functions of life, with little of general feebleness or decay, to the total extinction of power and consciousness which a few minutes may bring on. A fit of passion, or other mental excitement, may produce this rapid change; or it may steal in silence on those who have lain down to rest in peace, and are found to sleep in death.

In almost all, if not in all, of these cases, great structural changes are found in the heart or in the large blood vessels; but extended experience does not warrant the belief, at one time entertained, that ossification of the nutrient arteries of the heart is the lesion to which the disease is to be referred. The alterations observed are various, and there is no one that has universally presented itself. Dr. Forbes has established these facts in his analysis of 45 fatal cases, in which an examination after death had been made. Of these 45 cases he reckons 4 in which there was no organic disease (except obesity), and 2 exhibiting organic disease of the liver only. Thus there were 6 cases in which the heart and blood vessels exhibited no morbid change. Of the remaining 39, in all of which the heart or great vessels were affected, there were 10 in which the organic disease was confined to the heart alone, 3 in which it was limited to the aorta, and 1 where the coronary arteries were alone diseased. In the remaining 25, therefore, the injuries must have been more complicated. In the whole 39 there were 16 instances of ossification or cartilaginous degeneration of the coronary arteries; 16 of ossification or other disease in the valves; 24 of disease of the aorta (dilatation or ossification, or both); and 12, or perhaps more, of preternatural softness of the heart. Of three cases detailed by Dr. Latham, there were two in which the muscular structure of the heart was reduced to an extreme degree of tenuity and softness. In the third its muscular substance was of a texture looser than natural, while the coronary arteries and the whole aorta were converted into bony tubes. Of 13 patients labouring under angina pectoris, and examined only during life, there were 9 in whom he convinced himself of the existence of feebleness of the heart; dependent, in all probability, upon simple atrophy or fatty degeneration of the muscular structure. In some of these 13 there was evidence of disease of the valves and large vessels, the nature of which was unknown. Dr. Forbes, in stating 12 as the number of instances in which preternatural softening was found, remarks, that in a great many cases the consistence of the heart was not mentioned. It is very possible, therefore, that it existed in a much larger proportion of the whole.

We conclude that ossific and cartilaginous degenerations of the coronary arteries, of the aorta, and of the valves, are the most common lesions accompanying this disease; but that the various changes of its muscular tissue, which produce an enfeebled action of the heart, are of scarcely less frequent occurrence.

Angina pectoris had passed unnoticed among practitioners until Dr. Heberden published a description of it, many years ago, in the Transactions of the College of Physicians of London; since which many gentlemen of eminence in their profession have attempted to investigate its nature, and have obliged us with their observations, particularly Drs. Percival, Fothergill, Wall, and Black.* By many of them it has been judged spasmodic. The late Dr. Parry, who has published † his sentiments on it, was of opinion, however, that it is in reality a case of fainting or syncope, which Dr. Cullen defines "motus cordis imminutus, vel aliquandiu quiescens," and as differing from the common syncope only in being preceded by an unusual degree of anxiety or pain in the region of the heart, and in being readily excited, during a state of apparent health, by any general exertion of the muscles, more especially that of walking. The supposed cause of angina pectoris (for which he has thought proper to substitute the name of syncope anginosa) is referred by him to a diseased state (generally ossification) of the coronary arteries of the heart.

The rigidity of the coronary arteries thus induced may act, he thinks, proportionably to the extent of the ossification, as a mechanical impediment to the free motion of the heart; and though a quantity of blood may circulate through these arteries sufficient to nourish the heart, as appears in some instances, from the size and firmness of that organ, yet there may probably be less than what is requisite for ready and vigorous action. Hence, though a heart so diseased may be fit for the purposes of common circulation during a state of bodily and mental tranquillity, and of health otherwise good, yet when any unusual exertion is required, its powers may fail under the new and extraordinary demand. In conformity with this notion, Dr. Parry endeavours to show that the chief symptoms of the disease are the effect of blood retarded and accumulated in the cavities of the heart and neighbouring large vessels, and that the causes exciting the paroxysms are those which produce this accumulation, either by mechanical pressure, or by stimulating in an excessive degree the circulating system; in consequence of which the heart, weakened by the mal-organisation, readily sinks into a state of quiescence, while the blood continues to advance in the veins. After this quiescence has continued for a certain period, the heart may recover its irritability, so as again to carry on the circulation, in a more or less perfect degree, from the operation of the usual stimuli; or death may at length ensue, from a remediless degree of irritability in the heart. Such is Dr. Parry's theory.

It is untenable, as far as it rests upon a presumed condition of the coronary arteries, which, as has been seen, is absent in numerous instances. Nevertheless, with or without this, there may be feebleness and want of irritability in the heart sufficient to satisfy the remainder of his explanation. Dr. P. Latham recurs to the theory of spasm; Dr. Hope speaks of the disease as a neuralgia of the heart. It may be inferred, when opinions are so various, that the arguments cannot be very convincing on any side; and that the theory is not trustworthy as a guide of treatment.

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* See his Chirurgical and Pathological Reports.

† See his Treatise on Angina Pectoris.

We should always look on angina pectoris as attended with a considerable degree of danger at an advanced period of life, and where the paroxysms are frequent or violent; and it usually happens that the person is carried off suddenly. When it really depends upon an ossification of the coronary arteries, or any organic lesion existing at the origin of the circulation, it is evident that we can never expect to effect a cure. In young persons, and when the disease is gradual in its progress, some hopes of recovery may be entertained.

The treatment is different according as it is to be employed during the paroxysms, or in the intervals. In the former case, the indication is to restore the failing action of the heart, and to ward off impending death. In the latter we endeavour to correct or moderate every accompanying derangement that is at all amenable to remedies, and to establish a discipline which shall, as far as possible, exclude every exciting cause of the paroxysms. For the treatment of the paroxysm, the patient who has once been attacked should always have medicines at hand, which may be administered immediately, without waiting for the arrival of a medical man. He should always be supplied with a small bottle of Hoffman's anodyne liquor — spiritus ætheris sulphurici compositus of the Pharmacopœia, another of sal volatile, — spiritus ammoniæ aromaticus, and a third of paregoric elixir, — tinctura camphoræ composita. In case of an attack, from half a teaspoonful to a teaspoonful of each should be given in a wine-glassful of water, and repeated every few minutes during the continuance or recurrence of the fit. If these means, or the use of the stimulants with laudanum instead of paregoric, appear of no avail, it will be for the medical man to attempt to lessen the load which he cannot excite the heart to overcome. The detraction of a few ounces of blood is by no means inconsistent with the preceding use of stimulants, or their continued employment during the protraction of the paroxysm.

It has been stated by Dr. Parry, that the extreme weakness of the pulse and coldness of the skin do not contra-indicate bleeding. He is of opinion, that in the paroxysms blood should be taken from a small orifice, the patient being placed in the horizontal position, while the physician is to keep his finger on the pulse, to decide the limits to which venesection is carried.

Perfect quietude, a free access of pure air, the supine posture, and frictions of the extremities, will assist the heart in recovering its accustomed rate of action. Should the paroxysm at any time assume the appearance of actual deliquium, it may be expedient to apply the spirit of ammonia to the nose, or to sprinkle the face, neck, and breast, with vinegar and water, or with sulphuric æther.

If the cessation of the vital principle continues long, or appears very complete, the application of a large blister to the chest will be advisable. In very desperate cases we may venture to pass slight electric shocks through it, rubbing the limbs at the same time with stimulating embrocations. Our exertions are to be continued on such occasions until the patient is reanimated, or unequivocal signs of real death are obvious.

Having pointed out the best means for moderating and removing the paroxysms of angina pectoris, it is proper to notice those from a rigid and steady adherence to which such as are subject to its attacks will, in all probability, experience much benefit, and these be prevented from proceeding to any alarming extent.

The patient should sedulously shun every source of mental inquietude and irritation, and the circulation be vigilantly guarded from the influence of sudden gusts of passion. Moderate exercise in the open air, particularly on horseback, which will be preferable to walking, and not likely to bring on a fit, if the rider will be content with a moderate pace, should daily and regularly be taken; but no violent or long-continued corporeal exertion should be attempted; nor should rising ground ever be ascended on foot without the utmost deliberation and care. Plain food, easily digestible, and not prone to fermentation in the stomach, should be made use of in small quantities at a time, being carefully masticated and deliberately swallowed. Late suppers should be prohibited. All fermented liquors will be improper. Gastric distension is indeed a very frequent concomitant upon organic diseases of the heart, and a source of great uneasiness and distress to those who labour under them. The occurrence of this symptom may, however, be obviated by abstinence from fermentable aliment; and when existing, may be palliated or removed by the judicious exhibition of the mineral acids, by the carbonate of soda or potass, and by the aromatic spirit of ammonia in combination with bitters. Whenever the patient perceives any tendency to plenitude in the vascular system, he should rigidly adhere to a low and abstemious regimen, and occasionally take some purgative, such as the submuriate of mercury and jalap, conjoined with a little ginger or any other aromatic. At all times the bowels should be kept regular, and one or two daily evacuations be procured. Flannel should be worn next to the body. Some relief possibly may be obtained by keeping up a permanent counter-irritation and discharge on the surface, as near as possible to the seat of the disease, by means of a perpetual blister, or by a seton passed through the integuments over the region of the heart. Warm bathing and friction of the extremities might also prove useful, by promoting circulation in the limbs, and determining to the surface of the body, thereby diminishing the fulness of the heart and large vessels. As a medicine, pills composed of the subcarbonate of soda, sulphate of iron, and extract of gentian, may be taken twice a-day with an infusion of ginger.

Although these several means may do much to procrastinate the fatal catastrophe in some cases, still they will prove inefficacious in others.

INORGANIC, NERVOUS, OR DYSPEPTIC PALPITATION OF THE HEART.

Strictly speaking, palpitation of the heart is only a symptom, as well in the instances now to be treated of as in those where it accompanies febrile affections of other parts of the body, or inflammatory and organic diseases of the heart itself. Nevertheless, it often constitutes so prominent and important a part of the malady under which the patient suffers, as to deserve, and to have obtained in most nosological works, a distinct notice as a separate disease. Palpitation may be described as an excited action of the heart, producing increased frequency and force in its pulsation; but in such a manner, that these seem to arise, as indeed they actually do, from increase of effort rather than from increase of power. The beats, both of the heart and arteries, are apt to be irregular in point of rhythm, and unequal as regards their strength; as a consequence, probably, of their being affected by the slightest emotion of the mind, and by any trifling movement of the body. In some cases, especially in those of a dyspeptic origin, there are flutterings of the heart, coming on in paroxysms, consisting of a succession of incomplete contractions, which seem to give rise to no arterial pulse.

The characters of this disease are, in a great measure, negative. There is an absence of febrile symptoms. There is an absence of the symptoms and signs of organic disease of the heart. There is, in most of its forms, difficulty of breathing, especially on making any exertion; but there is seldom any inability to lie down in bed, and seldom any cough as a part of the disease, or, if there be cough, it is without expectoration.

Under this head we design to speak briefly of those circumstances in which an excited action of the heart is observed, in the absence of organic change in the heart itself; and without the co-existence of any general febrile condition of the system at large, without also any disturbance from diseases of the lungs. Now, such a state of things may exist in consequence of a general plethoric state of the patient; or, again, and more frequently, as the result of a debilitated or anæmic condition; or, again, it may arise sympathetically in connection with disorder of the digestive organs, or may be an accompaniment of that proteiform malady, hysteria, or of a natural irritability of the nerves, from whatever cause arising.

Palpitations of the kind here considered are distinguished from those accompanying endocarditis and pericarditis by the absence of febrile symptoms; and from these and other more chronic affections, by the absence of those abnormal physical signs which are described under their appropriate heads. Pure emotional palpitations of the heart we believe to be often congenital and constitutional, and scarcely to be combated but by such attention to the general health as shall maintain every organ of the economy in a condition to promote, rather than hinder, the proper action of the rest. Air, exercise, fitting recreation, absence of care and of excessive labours, excitement, and disturbance of any kind, are combined conditions likely to be very successful when obtained, but which it is much easier to point out than to procure. These, indeed, are objects to be aimed at in all diseases of the heart, to the utmost extent to which they are attainable, and must engage attention in dyspeptic palpitations also; with regard to which there is one remark that we would confidently make, — namely, that although, perhaps, in the majority of examples other dyspeptic symptoms accompany palpitation, arising from disorder of the stomach and digestive organs, yet that, in not a few also, the tendency to palpitation is the only well-marked symptom of indigestion. Of this we are convinced by personal observation, and it is in accordance with a general law, that the development of a less direct evil consequence is often accompanied by abatement or disappearance of the primary. Thus weight and oppression of the stomach are often less felt when urticaria or headache have come on.

It has been asserted, that the formation of oxalic acid in the system is often associated with a great proneness to palpitation; and with the view of decomposing this abnormal product of assimilation, the mixed hydrochloric and nitric acid, to the extent of five or ten minims of each in their diluted states, have been given in tonic mixtures twice or thrice a day; such mixtures having morphia added to them in small quantities, as from one-sixth to one-fourth of a grain to each dose, where the palpitations are urgent and the system very irritable. Such treatment we have often followed with success. We have, however, often seen palpitation of a dyspeptic kind (though not unfrequently referred to organic disease of the heart) relieved by the use of the combination of the chalk mixture with small doses of sulphate of magnesia; with regard to which the late Professor A. T. Thompson was wont to display his precipitate rashness by declaring it to be unchemical; while more recent medical sciolists have not sufficiently noted the more energetic affinity of chalk than of magnesia for oxalic acid, whereby the former may produce results sought in vain from the latter. In all cases, an occasional mercurial may be required for the improvement of the secretions of the liver.

Tonics — as some of the milder preparations of iron, as the mistura ferri composita, or bitter infusions—say of calumba, or quinine in small doses—are often useful in completing a cure.

Spiritus ammoniæ aromaticus, in half-drachm doses, or sesquicarbonate of ammonia, to the extent of from five to eight grains, in a sufficient quantity of water, are the best resources during the paroxysm. If irritating ingesta be supposed to be the exciting cause, it might be desirable to remove these by an emetic of a scruple or half a drachm of zinc; but the use of the antispasmodics above mentioned should first be tried.

As dilatation and hypertrophy constitute the organic changes of the heart,—in which departure from healthy structure is marked by no abnormal valvular or rubbing sound, and which, therefore, are most readily overlooked when existing, in a slight degree, in an organ prone to palpitation,—we have thought it well to append a very brief sketch of each of these diseases in the present place.

DILATATION OF THE HEART.

THIS morbid state consists in an enlargement of one or more of the cavities of the heart. It affects the right ventricle most frequently, but is common in the left ventricle also, and sometimes occurs simultaneously in all the four cavities. As a guide whereby to ascertain the presence of dilatation, it should be remembered that the natural capacity of the left ventricle in an adult male of average stature is that of a hen's egg; that of the left auricle is the same; while the cavity of the right ventricle or auricle is a little larger. Dilatation of the cavities may be accompanied by thinning of their muscular walls, or by a natural condition of these, or, again, by their hypertrophy. In the auricles, the last combination is the general one. The effect of dilatation of the cavities of the heart, other things being equal, is to diminish its propulsive power. Co-existing hypertrophy of its muscular structure will diminish, and may counteract, this result; but, in speaking of dilatation, we assume that it is the predominating disease.

Symptoms. These are such as arise from retardation of the current of the blood, producing congestion in various organs. If the left ventricle is alone affected the lungs first suffer, and we have difficulty of breathing and cough, either dry or with a watery expectoration. As the mischief is propagated farther back in the course of the circulation, and especially when the right cavities have become dilated, lividity of the complexion appears, and symptoms affecting the head—as headache, giddiness, drowsiness,—are observed: serous effusions, too, into the cellular tissue and cavities come on early; and there may be passive hæmorrhages or ecchymoses. Palpitations occur under any slight excitement, but are not violent. All these symptoms, however, belong to diseases of the heart generally, and are not distinctive of this particular affection. The pulse is feeble, and may assume any form of irregularity. The most constant and most characteristic sign of dilatation of the right cavities, is the permanent distention of the external jugular veins, without sensible pulsations,—a distention which does not disappear on compressing the veins in the superior part of the neck.

Physical Signs. Increase of dullness on percussion, proportioned to the increased bulk of the heart. An abrupt and feeble impulse. The first sound is shorter in duration than in health. It is also louder, except when there is very great feebleness in the contractions of the heart. The sounds of the heart are heard over a large extent of the chest, on the whole left side anteriorly, in the same parts of the right side, and on the left side posteriorly in extreme cases. The impulse is felt lower down than natural when the dilatation is considerable, and is perceived beneath the sternum when the right ventricle is much enlarged. If, in consequence of dilatation of any of the orifices of the heart, the valves be inadequate for their closure, we have superadded the appropriate signs of regurgitation.

Causes. All obstacles to the circulation, which have their seat at the orifices of the heart or in the aortic or pulmonary systems; and alone, or in combination with these, all causes which diminish the resistance of the walls of the heart. The dilatation of the left ventricle may constitute an obstacle that shall subsequently produce a similar affection in the right. The dilatation of the auricles is consequent upon that of their corresponding ventricles.

Treatment. The indications in this case are to give tone to the heart, in common with the system at large; and to diminish the amount, without deteriorating the quality, of the circulating fluids, in order to relieve or to prevent distention. If dropsy be present, its removal must first be attempted by treatment detailed under that head. If this be accomplished, its recurrence may often be obviated, and the general condition of the patient be much improved by a combination of brisk purgatives with tonic medicines. In the most severe and troublesome cases, we place most reliance on a strong purgative, to be taken about three times in the week, while the tonic is administered by itself.* In other cases, the tonic and aperient may be more agreeably combined, without any detriment to their beneficial effects.* Purgatives are preferable to diuretics for the prevention of congestion in the system, since they unload the bowels, procure a better action of the liver, and often also of the kidneys themselves.

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* ℞ Pulv. Scammoneæ,
Pulv. Radicis Jalapæ, ā gr. vij.

Hydrargyri Chloridi,
Pulv. Zingiberis, ā gr. iij.

Misce; fiat pulvis ter in hebdomadâ sumendus.

Vel,

℞ Pulv. Jalapæ Comp. ʒj.

Fiat pulvis ter in hebdomadâ sumend.
℞ Mistur. Ferri Comp. ℥iss.

Fiat haustus ter die sumendus.

* Take Powder of Scammony,
Powder of Jalap, of each seven grains.
Calomel,
Powdered Ginger, of each three grains.
Mix, and make a powder, to be taken thrice in the week.

Or,

Take Compound Jalap Powder, one drachm.
Make a powder to be taken thrice a week.
Take Compound Iron Mixture, an ounce and a half.
Make a draught to be taken thrice daily.

HYPERTROPHY OF THE HEART. ENLARGEMENT OF THE HEART.

The enlargement in this disease arises from increase of the muscular structure of the heart. It occurs most frequently in the left ventricle, but affects the right ventricle also, and the auricles as well. While either ventricle has its muscular walls thickened, it may have its cavity diminished, or of the natural size, or enlarged. Hence arise the terms *hypertrophy with contraction*, *simple hypertrophy*, and *hypertrophy with dilatation*. Of these, the third variety is most commonly met with. The effect of hypertrophy is to give increased force to the contractions of the heart, and, other things being equal, it gives increased momentum to the issuing current of blood. Dilatation of the heart makes a certain amount of contractile force produce a less momentum in the issuing current of blood, so that these two changes are, in their effects, opposed to, and corrective of, each other. In speaking of hypertrophy generally, we suppose the tendency to increased momentum in the circulation to predominate. In treating of dilatation, we consider defect in the force of the current to be the more conspicuous phenomenon.

Symptoms. — Shortness of breath, and palpitation, occurring especially on exertion. Neither the one nor the other, however, is so urgent as in many other diseases of the heart. General dropsy is said to be a consequence of this affection; but this is doubtful. It is not unfrequently attended with headach, giddiness, or apoplexy. The pulse is preternaturally hard and strong.

Physical Signs.—The impulse of the heart raises the ear or hand

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Vel,	*Or,*
℞ Tinctur. Ferri Sesquichlorid. ♏xv.	Take Tincture of Sesquichloride of Iron, fifteen minims.
Infusi Quassiæ, ʒxj.	Infusion of Quassia, eleven drachms.
Syrup. Zingib. ʒj.	Syrup of Ginger, one drachm.
Misce; fiat haustus ter die sumendus.	Mix; to be taken three times a day.
* ℞ Misturæ Gentianæ Comp. ℥iss.	* Take Compound Mixture of Gentian, an ounce and a half.
Fiat haustus ter die sumendus.	To be taken three times a day.
Vel,	*Or,*
℞ Pulv. Cinnamomi Comp. gr. v.	Take Compound Cinnamon Powder, five grains.
Pulv. Ferri Sulphat. gr. ij.	Sulphate of Iron in Powder, two grains.
Pulv. Scammon. gr. ij. vel gr. iij.	Powdered Scammony, two or three grains.
Fiat pulvis ter die ex Sacchari Fæce sumendus.	Make a powder, to be taken in treacle three times a day.

applied over its apex with an increase of force proportioned to the amount of the disease. This may be considered diagnostic of the affection. The contractions of the heart are slower than natural, hence the first sound is prolonged, and the period of repose shortened. The sounds of the heart, especially the first, are less distinctly heard than in the natural state; when, however, dilatation co-exists with hypertrophy, the former gives to them its own characteristic abruptness and loudness. A certain amount of hypertrophy has the effect of augmenting these characters. On percussion, we find more extended dulness over the heart than natural; and this is greatest when dilatation combines with hypertrophy, to increase the bulk of the organ.

Causes.—Whatever acts as an habitual stimulus to the heart,—as indulgence in fermented liquors; moral emotions of an exciting kind; violent and prolonged muscular efforts; the irritation of an adherent pericardium; and also such impediments to the circulation in any part of its course as demand of the heart an increased effort to surmount them. Thus narrowing of the aorta, or regurgitation through its valves, occasion this disease in the left ventricle. Similar changes in the pulmonary artery, or impediments to the circulation through the lungs, have a like effect upon the right ventricle. The auricles are found to be hypertrophied in all cases when they have become dilated.

Treatment.—It is manifest that when hypertrophy is dependent upon any of the above-mentioned incurable lesions, it can admit only of palliation. Under the most favourable circumstances, it must be considered an intractable disease, the treatment of which must be long continued, and will be found tedious in the extreme, if it be so conducted as to give it any chance of success. Much more is to be done by negative than by positive means. Avoidance of all exertion, mental or bodily; a total absence from all stimulating drinks, or a very sparing allowance of them, should be strictly inculcated. The diet should be light in quality and moderate in amount, spices and seasoning being used in small quantities only, if at all, and meat given sparingly. Gentle exercise — as in a carriage, which should not be continued so as to produce fatigue — and agreeable occupation of the mind are beneficial, as conducing to natural sleep, and tending to preserve the general health. All sources of anger, disquietude, and annoyance, should be as much as possible excluded. If dropsy be present, or apoplexy be threatened, such remedial or preventive means must first be resorted to as are described under those heads respectively: chronic catarrh and emphysema must receive the treatment indicated for them. If, when the disease has been simplified as far as practicable by the removal or relief of its causes or complications, there still be much plethora, free bloodletting may be advisable at the outset; but we are opposed both to very copious and often repeated detractions of blood. The bowels should be so regulated by occasional mild aperients as to prevent accumulation, and to keep the secretions of the whole alimentary canal in a healthy state. Digitalis has the power of controlling the excessive action of the heart; but we doubt whether the benefits derived from it are permanent, and we believe that the sudden deaths occurring during diseases of the heart are sometimes referrible to its long continued use.

SPASMODIC ASTHMA.

Asthma is a spasmodic affection of the lungs, which comes on by paroxysms most generally at night, and is attended by a frequent, difficult, and short respiration, together with a wheezing noise, tightness across the chest, great anxiety, and a cough, generally terminating in a mucous expectoration. These attacks are very prone to return at various and uncertain periods, while in the intervals between them the health may be completely restored, unless either the structure of the lungs has become affected as a consequence of their frequent supervention; or the essential asthmatic condition has been complicated with some other disease from the commencement.

In our conception of it, asthma is not necessarily or generally of an inflammatory nature. We believe, with Dr. M. Hall, that it is an example of the excito-motory functions of the spinal cord brought into play by some source of morbid irritation, either in the respiratory or digestive mucous surfaces; yet we see no reason why inflammation in the bronchial mucous membranes should not be one source of the excited muscular action, so as to form a mixed disease, partly inflammatory and partly spasmodic; and thus give rise to the intense difficulty of breathing so often witnessed in bronchitis. Humid asthma we look upon, in all cases, as a disease in which the characteristic symptoms of catarrh and asthma may be intermingled in very various degrees, so as to cause the compound malady to approximate more nearly to one or other of its components.

Asthma rarely appears before the age of puberty, and seems to attack men more frequently than women. It is sometimes connected with a deformed state of the chest. In some families there seems to exist a predisposition to the disease. Dyspepsia always prevails, and appears to be a very prominent feature in the predisposition. Its attacks are most frequent during the heats of summer, and in winter when heavy fogs or sharp cold winds prevail.

When the disease is attended with discharge of humours from the lungs, it is called the humid asthma; but when it is unaccompanied by any expectoration, it is known by the name of the nervous or spasmodic asthma.

On the evening preceding an attack of asthma, the spirits are often much affected, and the person experiences a sense of fulness about the stomach, with lassitude, drowsiness, and a pain in the head. On the approach of the succeeding evening he perceives a sense of tightness and stricture across the breast, and a feeling of straitness in the lungs impeding respiration. The difficulty of breathing continuing to increase for some length of time, both inspiration and expiration are performed slowly, and with a wheezing noise; the speech becomes difficult and uneasy, a propensity to coughing succeeds, and the patient can no longer remain in a horizontal position, being as it were threatened with immediate suffocation. He starts up into an erect posture, and hastens to a window for air. A constipated and flatulent condition of the bowels generally precedes and accompanies the attack.

These symptoms usually continue till towards the approach of morning, and then a remission commonly takes place; the breathing becomes less laborious and more full, and the person speaks and coughs with greater ease. If the cough is attended with a free expectoration of mucus, he experiences much relief, and soon falls asleep in all probability. Sometimes the expectoration is very scanty, and then the term dry asthma is applied to the disease.

When he awakes in the morning he still feels some degree of tightness across his breast, although his breathing is probably more free and easy, and he cannot bear the least motion without rendering this more difficult and uneasy; neither can he continue in bed, unless his head and shoulders are raised to a considerable height.

Towards evening he again becomes drowsy, is much troubled with flatulency in the stomach, and perceives a return of the difficulty of breathing, which continues to increase gradually till it becomes as violent as on the night before.

After some nights passed in this way, the fits at length moderate, and suffer more considerable remissions, particularly when they are attended by a copious expectoration in the mornings, and that this continues from time to time throughout the day; and the disease going off at last, the patient enjoys his usual rest by night without further disturbance.

During the fits the pulse is not usually much affected, but in a few cases there is a frequency of it, with some degree of thirst, and other febrile symptoms. In some persons the face becomes turgid and flushed during the continuance of the fit; but more commonly it is pale and shrunk. Urine voided at the beginning of a fit is generally in considerable quantity, and with little colour or odour; but after the fit is over, what is voided is in the ordinary quantity, of a high colour, and sometimes deposits a sediment.

Noxious vapours, impure and smoky air, cold and foggy atmosphere, sudden changes of temperature, dyspepsia or irritation in some of the abdominal viscera, but particularly in the stomach; irritation of the bronchial system by aerial acrimony or other causes; suppression of long-accustomed evacuations, frequent catarrhal attacks, erratic gout, general debility, are the causes from which this formidable disease may arise in different individuals.

Asthma having once taken place, its fits are apt to return periodically, and more especially when excited by certain causes —such as by a sudden change from cold to warm weather, or from a heavier to a lighter atmosphere; by severe exercise of any kind which quickens the circulation of the blood; by an increased bulk of the stomach, either from too full a meal or from a collection of air in it; by exposure to cold or damp air, obstructing the perspiration, and thereby favouring an accumulation of blood in the lungs; by violent passions of the mind; by disagreeable odours; and by irritations of smoke, dust, and other subtile particles floating in the air. Persons who have become subject to the disease, seldom escape an attack in the spring and autumn.

The proximate or immediate cause of the disease has, by Dr. Cullen and most other writers, been supposed to be a preternatural or spasmodic constriction of the muscular fibres of the bronchia, which not only prevents their being so dilated as to admit of a free and full inspiration, but also gives them a rigidity, which interferes with a free and full expiration.

The theory of spasm as the source of asthma may, we conceive, be freely admitted since the anatomical establishment of the existence of bronchial muscular fibres, which are the seat of such spasms. We have always considered, independently of anatomical investigation, that a series of gradually diminishing, and ultimately very minute, air tubes, such as those of the human lung, could never discharge their office of bringing air and mucous from their extreme branches for expulsion under the contractile pressure of the thoracic parietes, unless the order of their own contractions were regulated by some inherent power in their own coats of a higher order than mere elasticity. If any one doubt the soundness of this conviction, let him try to perform the acts of respiration with a dead lung. To us the action of such a power seems essential, if not to every individual act of respiration, at least for the prevention of serious embarrassments from the slightest disturbance in the process of secretion within the tubes. Herein we have always found physiological evidence based on mechanical grounds for the existence of a muscular structure in the coats of the bronchia, a conclusion which Cullen and so many others have arrived at chiefly on pathological evidences, while Dr. M. Hall's exposition of excitomotory phenomena make it clear, how, under a peculiar morbid condition, these muscular fibres may suffer intense disturbance in their actions from irritations of distant parts by which they were generally little, or not at all, affected. This tendency to spasmodic abnormal contractions we regard as the asthmatic element, rarely existing alone and uncombined, but seldom absent in the graver affections of the mucous surfaces of the lungs. In some cases we have an artificial asthma, as where the most intense spasmodic dyspnœa is induced by the vapour of ipecacuanha or other excitant of the reflex function of the lung, as by chlorine, or even by cold applied to the bronchial surface, in all which examples we suppose the result to be produced by a circuitous rather than direct action on the bronchial muscles. So, too, certain impressions on the skin or intestinal surfaces may in the predisposed bring on the sudden contraction of these muscles; nor is there any thing at variance with our general theory in supposing that the commencing turgor of the membranes, from which in humid asthma secretions are about copiously to be poured forth, may bring on the convulsive action of these parts, so that we might agree with Dr. Bree, in regarding these secretions as important agents in the production of the malady, while the fact that asthma exists without secretion, and that secretion often takes place without accompanying spasm or asthma, show that this is not the only and necessary condition of its existence.

The doctrine of Dr. Cullen has been disputed by Dr. Bree, who, in a very ingenious treatise on this disease, offers it as his opinion, that irritation seated within the air-cavities, and arising either from an effusion of serum or from aerial acrimony, is the true proximate cause of convulsive asthma. The mucus which is excreted in the course of the disease, and which has been looked upon by Dr. Cullen and others as only an effect, Dr. Bree views as a prominent cause of the paroxysm; or, when it is absent, only yielding to a different cause equally irritating to the organ, and exciting spasmodic contractions of the respiratory muscles.

Asthma usually diminishes as soon as a mucous secretion begins to take place, and is speedily and effectually relieved by a spitting of blood. These facts are convincing proofs of a preternatural fulness of the vessels of the mucous membrane of the bronchia, so as to impede free respiration and to produce all the symptoms of spasmodic asthma.

The sudden accession of the paroxysms generally after the first sleep, their returning at intervals, and the sense of constriction about the diaphragm, occasioning the patient to get into an erect posture, and to fly for relief to the cold air, will readily distinguish asthma from other diseases.

If the attacks of asthma are neither frequent nor severe, the constitution unimpaired, and the patient is young, there may be a possibility of removing the disease entirely; but where it comes on at an advanced period of life, has frequent paroxysms, and proceeds from an hereditary predisposition, or from some congenital condition of the body, it will be impossible to eradicate it. By changing into other diseases, as emphysema and hydrothorax, or by occasioning an aneurism of the heart or of some large vessel, it is apt to prove fatal; but without such occurrences it is by no means attended with much danger, although it may seem in many instances to threaten almost immediate death by suffocation. Anasarcous swellings of the lower extremities frequently attend on asthma, where it has been of long duration.

The respiration becoming suddenly quick and short, the pulse weak and irregular, paralysis of the arms, great depression of strength, a scanty secretion of urine, and frothing at the mouth, indicate extreme danger.

The inspection of dead bodies has thrown but little light either on the nature or cause of this disease. A series of observations from Morgagni, and the works of many other anatomists, have, however, proved the existence of extravasated serum in the vesicles of the lungs of asthmatics, in most instances. Where the disease has been of long continuance, various morbid affections of the system have been discovered on dissection.

In the treatment of a person suffering under an attack of asthma we should endeavour to moderate the violence of the paroxysms, and when they are subsided, to hinder their recurrence. With the view of preventing any danger from the difficult transmission of blood through the lungs, and of obviating the plethoric state of the system, which might be supposed to have a share in producing a turgescence of the blood in the lungs, it is a frequent practice to draw off blood during the paroxysm; but bleeding has proved highly injurious in almost every instance of the disease; and is certain to be attended with bad consequences where asthma has arisen in elderly persons, or has been of long standing. In full plethoric habits, or when the paroxysms are very severe and attended with signs of much congestion of the lungs and brain, indicated by a lividity of the countenance, stupor, extreme dyspnœa, &c., possibly cupping between the shoulders, or applying leeches to the chest, might afford some relief, and be a proper substitute for venesection.

On blood-letting, Dr. Bree makes the following judicious observations: — "Many doubts," he says, "occur on the propriety of bleeding in any species of this disease. Before the pulmonary vessels have attempted to relieve themselves by their exhaling orifices, blood may possibly be drawn with advantage; but when effusion has taken place, a certain debility is indicated, and a loss of contractile power in the coats of the vessels, which prudence will rather submit to during the fit, and attempt to remedy in the intermission. In this state of the disease, nature pursues the path best adapted to her circumstances: the escape of serous fluid gradually relieves the vessels, and respiration and absorption must be relied on, with a salutary cough, to clear the air-cells of the lymph.

"Bleeding is an imprudent operation in every species of asthma, unless it be the second. In the first species I have repeatedly directed it; but I have never had reason to think that the paroxysm was shortened an hour by the loss of blood; and I have often been convinced that expectoration was delayed, and more dyspnœa remained in the intermission than was common after other paroxysms. In old people who have been used to the disorder, it is certainly injurious. In the second species there are occasional topical inflammations, which this operation may relieve; but if it is carried far, there is the strongest reason to apprehend that the patient may be plunged into asthma of the first species."

That the reader may have a clear idea of Dr. Bree's meaning, it is necessary to say that he divides convulsive asthmas into four species: —

The first species, arising from pulmonic irritation of effused serum.

The second species, arising from pulmonic irritation of aerial acrimony.

The third species, arising from abdominal irritation in the stomach, uterus, or other viscera.

The fourth species, secondary and dependent upon habit, after irritation is removed from the thoracic or abdominal viscera.

Purging is attended with the same injurious effects as bleeding, in all species of this disease; but as asthmatics are hurt by an accumulation or stagnation of matters in the alimentary canal, so costiveness must be obviated by a proper attention to diet; and where this proves insufficient, by the employment of gentle laxatives, — such as the oleum ricini, or magnesia, with the addition of a few grains of rhubarb, — as asthma will be relieved by gently opening the bowels. During a paroxysm, costiveness may be removed by an aperient clyster, with an addition of assafœtida*, or the ol. terebinthinæ, which proves so efficacious in hysteria.

It might be attended with some danger to administer an emetic during a paroxysm of the asthma, particularly where the respiration is considerably impeded, or the patient's strength much exhausted. Where the paroxysm is excited by an overloaded or deranged state of the stomach, emetics are indicated, and ipecacuanha will be the most appropriate.

Blistering the chest and issues have been much employed in asthmatic cases, but they seem only to be serviceable in those which have arisen from the stoppage of some long-accustomed or habitual discharge, or in the complicated cases of old people. In pure spasmodic asthma they have not been found either to prevent or relieve the fit.

To moderate the severity of the paroxysms in asthma, we cannot employ a more powerful and efficacious mean of relief than the inhaling warm steam frequently from an inhaler, or the spout of a tea-pot. An infusion of camomile flowers, with the addition of a little æther, may be used on the occasion, or the patient may inhale the vapour arising from a tea-spoonful of Hoffman's anodyne and another of tinctura opii, mixed with a little warm water.

In spasmodic asthma, smoking has in some cases proved very beneficial. The lobelia inflata, or Indian tobacco, has been much employed in America in asthmatic cases. In its operation it is nearly allied to stramonium and common tobacco, and frequently succeeds in checking the paroxysms when given at its invasion, or shortly before. From six to fifteen grains of its powder may be prescribed for a dose, or from half a drachm to two drachms of its saturated tincture. Hyoscyamus, conium, and belladonna, are sometimes used in asthma. Of late the stramonium, or thorn-apple, has been much employed in the form of smoke in spasmodic asthma; and from the striking relief procured by it, has excited considerable attention. The roots of the plant are chiefly used; these, after being dried in the shade, and beaten so as to separate the fibres, are to be cut into small pieces, and to be smoked in a common tobacco-pipe. The smoke is to be drawn as much as possible into the chest, where it usually occasions some degree of heat, followed by expectoration. There can be no doubt that it acts as a narcotic; but I have observed it to produce more powerful effects on the disease in question than the smoke of tobacco. As some unpleasant consequences have, however, attended on an improper use of stramonium, it has been suggested that every good property of this plant may be expected from a similar use of the common white poppy-heads, the smoke of which, whether swallowed or inhaled, must be equally anodyne, and less deleterious.

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* ℞ Decoct. Malvæ Compos.
Misturæ Assafœtid. āā f. ℥v.
Ol. Ricini, f. ℥j. M.
Ft. enema.

* Take Compound Decoction of Marshmallows,
Mixture of Assafœtida, of each five ounces.
Castor Oil, one ounce.
Mix them for a clyster.

Inhaling the vapour from tar under a state of liquefaction, as been attended with a pleasing effect in some cases of spasmodic asthma.

Under the supposition that asthma arises from spasm of the lungs, antispasmodics have been much, and appropriately, used to moderate the paroxsyms. Of this class camphor, æther, and opium, have been found most useful, and particularly the latter; but its value is frequently much enhanced by combining it with the former, as below.* The acetate of morphine is sometimes substituted for opium, but without any decided benefit.

These medicines seem, however, to have no infallible efficacy in shortening the paroxysms even of true asthma, and much less those of the numerous heterogeneous maladies referred to that head. The fetid gums, particularly assafœtida †, as also castor, valerian, and musk, have likewise been much employed in cases of asthma.

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* ℞ Misturæ Camphor. f. ʒx.	* Take Camphor Mixture, ten drachms.
Spirit. Æther. Sulphuric. ♏xl.—lx.	Spirit of Sulphuric Æther, forty to sixty drops.
Tinct. Opii, ♏xv. M.	Tincture of Opium, fifteen drops.
Ft. haustus, 4tâ vel 6tâ quâq. horâ sumendus.	Make them into a draught, to be taken every four or six hours.
† ℞ Misturæ Assafœtidæ, ——— Camphoræ, f. āā ʒvj.	† Take Assafœtida Mixture, Camphor Mixture, of each six drachms.
Spirit. Æther. Sulph. ♏xxx.	Spirit of Sulphuric Æther, thirty drops.
Tinct. Opii, ♏ix. M.	Tincture of Opium, nine drops.
Ft. haustus, quartis vel sextis horis capiendus.	Mix them, and let this draught be taken every four or six hours.

Dr. Bree mentions, "that having been afflicted with asthma, he took, during a paroxysm of the first species, four grains of solid opium, which produced nearly an apoplectic stupor for two days. After a few hours, the most debilitating sickness came on, with incessant efforts to puke. The labour of the respiratory muscles was abated, but the wheezing evidently increased; a countenance more turgid than usual, and intense headach attended. The pulse was increased in strength and quickness for a few hours, but then sunk into great weakness."

He further observes, "that the paroxysm showed itself four hours earlier than usual the next day, and two grains more were taken; respiratory labour seemed again to abate, but the anxiety increased to an alarming degree as the stupor became less. The pulse was now weaker, and frequently irregular. Loose motions succeeded, and a general sweat. The energy of the paroxysm then revived with exquisite distress. A medical friend, who attended with great care to the progress of those trials, became alarmed, and endeavoured to promote puking without effect. Blisters were applied, and draughts of vinegar and pepper were given, with strong coffee and mustard. The patient was at last brought back to a state more usual in former paroxysms; but with every care the exacerbations were no fewer than nine, before expectoration, becoming gradually more copious, concluded the fit. Notwithstanding the bad success of this experiment, opium was used in another paroxysm after an active vomit, and bad consequences still ensued, though not so extensively."

As the free passage of air to and from the lungs is obstructed in the first species of asthma by a lodgment of mucous matter, the expulsion of this should be promoted by expectorants, such as gum ammoniac, squills, &c., combined as below *, or as prescribed under the head of Peripneumony; but oily demulcents ought to be avoided, as being injurious.

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* ℞ Misturæ Ammoniaci, f. ℥v.
Oxymel. Scillæ, f. ʒiij.
Vini Antimon. Tartariz. ♏xxx.
Acidi Acetic. Dilut. f. ℥ss. M.
Ft. mistura, cujus sumat cochl. ij. subindè, vel urgenti tusse aut dyspnœâ.

Vel,

℞ Misturæ Ammoniaci, f. ℥j.
Liquor. Ammon. Acetat. f. ʒij.
Vini Antimon. Tartarizat. ♏x.
Syrup. Tolutan. f. ʒj. M.
Ft. haustus, sextis horis adhibendus.

Vel,

℞ Pilul. Scillæ Comp. gr. x. Fiant pilulæ duæ, sextis horis capiendæ.

* Take Mixture of Ammoniacum, five ounces.
Oxymel of Squill, three drachms.
Wine of Tartarized Antimony, thirty minims.
Distilled Vinegar, half an ounce.
Of this mixture let two table-spoonfuls be taken occasionally, or when either the cough or shortness of breath is troublesome.

Or,

Take Mixture of Ammonia, one ounce.
Solution of Acetate of Ammonia, two drachms.
Wine of Tartarized Antimony, ten minims.
Syrup of Tolu, one drachm.
Mix them, and take the draught every six hours.

Or,

Take Compound Squill Pill, two, consisting of five grains each, every six hours.

In most cases of asthma, dyspepsia is a prominent symptom, and the patient is much troubled with flatulency of the stomach, acidities, and other symptoms of indigestion. To remove these, it will be necessary to make use of absorbents, with carminatives and bitter infusions, as recommended under the head of Dyspepsia. Dr. Bree observes, that chalk and opium will astonish the asthmatic by the excellence of their effects, when the irritation proceeds from dyspepsia of the first passages only. Vinegar, separately exhibited, was likewise found by him to counteract the flatulence and distention of the stomach.

Diaphoretics — such as tartarized antimony, &c. — are a class of medicines which may prove useful in that species of asthma which is dependent upon pulmonic irritation, by promoting exhalation from the vessels of the lungs. Small doses of opium may be conjoined with a good effect, as in the pulv. ipecac. c., and the patient should not be subjected to the influence of irritating causes, such as are known to exist in towns and manufactories. Warm pediluvia may likewise be ordered.

In asthma arthriticum there are usually intermissions and other irregularities of the pulse, great anxiety of countenance, with a bluish tinge thereon. Large doses of opium, æther, camphor, and ammonia, are the medicines most likely to afford relief. Sometimes we may be forced to bleed the patient, and often to apply a blister to the chest. To assist these means we may add very warm pediluvia, and the inhalation of the vapour arising from hot water.

Besides the means which have been recommended to be employed during a fit of asthma, it may be necessary to mention, that recourse has been had to the assistance of pneumatic medicine; and that the gases, or factitious airs, have been much used by a few physicians, but more particularly by the late Dr. Beddoes and Dr. Thornton. By the former of these gentlemen we are told that such is the miraculous effect of oxygen, vital or dephlogisticated air, when applied in asthma, that no sooner does it touch the lungs than the livid colour of the countenance disappears, laborious respiration ceases, and the functions of all the thoracic organs go on easily and pleasantly again.

Of pneumatic remedies, Dr. Bree speaks with little confidence as to their efficacy in curing asthma. He, however, proposes oxygen as an auxiliary with other means of relief in that species arising from mucous irritation. In the dry asthma, oxygen was observed by him to be manifestly hurtful, and hydrogen and hydrocarbonate were tried without benefit.

"Of calming vapours," says Dr. Watson, "thus applied by inhalation to the very parts affected, and operating either immediately upon the nervous fibrils there distributed, or mediately after admission into the blood, the vapour of chloroform is likely in respect of its soothing power, to supersede all others. Inspired in moderate quantity, far less than is requisite to produce genera insensibility, it has already been found of singular efficacy in allaying at once the spasmodic distress of an asthma fit. But it is likewise manifest already that this is a remedy too potent and subtle to be intrusted to the discretion of the patient himself. We must know more about it than we have yet learned before it can be safely self-prescribed, or self-administered.

"Less hazardous, certainly less costly, less difficult, therefore, of attainment by the many, but less sure also, and less rapid in its result, is the respiration of air impregnated with the fumes of burning nitre. The mode of effecting this is simple enough. Pieces of blotting paper, each as big as one's hand, are to be dipped in a saturated solution of the nitrate of potash, and then dried. One of these papers, being placed on an earthenware plate, and ignited, the fumes presently become sensible throughout the room; and within a quarter of an hour their influence in many cases is rendered evident, in clearing the passages, and gradually opening the air tubes."

Such are the remedies to be employed during a paroxysm of asthma; but in the intermissions we should have recourse to tonics,—such as the cinchona bark, quinine, bitter infusions, chalybeate waters, and preparations of iron, particularly the ferri subcarbonas and ferri sulphas, various formulæ of which will be found under the head of Dyspepsia. To assist the effects of these remedies, cold bathing may be used during the intermissions; and where this cannot be obtained, washing the breast frequently with cold water may probably be of some service. In addition to other tonics, exercise either in swinging, sailing, riding in a carriage or on horseback, but particularly the latter, together with a change of air and scene, will be beneficial to asthmatics: they should try different situations, until by perseverance one is found out to live in, where the disease is rendered less distressing, or is entirely removed. Their clothing should be warm, and flannel be worn next to the skin.

Whatever preparation of iron we may employ, it should always be given in small doses at first, increasing the quantity by degrees. If heat or any other unpleasant symptom is occasioned by it, its use must be suspended for a time, and saline draughts with opium be substituted. A want of firmness in continuing the use of tonics, when properly indicated, is, however, a great source of their discredit. In case of some temporary inconvenience being experienced from employing any particular medicine or form, the practitioner should change it for another, never abandoning the general intention of strengthening the system, and thereby preventing a return of the disease.

As in many cases of asthma, and perhaps in the great majority of them, some effusion of serum into the lungs takes place, and the disease being long protracted, particularly at an advanced age, is very apt to terminate in hydrothorax, it would appear that digitalis, combined with the other remedies which have been mentioned, during the intervals of the paroxysms, will be a very judicious mode of treatment. Indeed, its diuretic powers on such occasions have in many cases produced a happy effect.

During the intervals of asthmatic paroxysms, the bowels are to be kept open and regular by gentle aperients, — such as rhubarb, magnesia, and manna, —and all exciting causes are carefully to be avoided. The flatulency accompanying asthma is to be relieved by alkalies and absorbents, various formulæ of which are inserted under the head of Dyspepsia. Sometimes a small portion of diluted acetic acid will remove flatulency.

Emetics, by their determining the blood from the lungs to the surface of the body, and their supposed power of assisting expectoration, have been thought highly useful in all species of asthma except that which depends on habit. A vomit given in the evening, when a fit has been expected to come on in the night, has in some instances appeared to prevent its attack. It therefore seems an advisable practice to make use of gentle emetics during the intervals of the paroxysms, and to repeat them from time to time. Ipecacuanha being milder and more certain in its operation than any of the preparations of antimony, should have a preference given to it.

In the intervals of the attacks it will be highly necessary for the patient to avoid the various exciting causes; to keep the digestive functions in a proper state; to guard against atmospherical vicissitudes, and to keep up a regular and uniform excretion from the pores of the skin by flannel: lastly, to maintain as even a state of mind as possible, remembering that asthma is more alarming than dangerous, and that it rarely proves fatal unless when complicated with, or in inveterate cases terminating in, some organic disease of a vital organ.

A dry and settled atmosphere is most friendly to asthmatical people. While some asthmatical persons cannot live, however, with any comfort in the atmosphere of large cities, there are others, again, who feel themselves better in an air replete with gross effluvia, and breathe with greater ease in a crowded room where there are several candles burning, and a fire. Indeed, the removal from a cold to a warm climate is sometimes found beneficial.

In every species of asthma the patient's diet should consist of such things as are light and easy of digestion, carefully avoiding at the same time whatever may tend to generate flatulency; and as many kinds of vegetables are apt to be attended with this effect, they are almost all improper. Animal food of the lightest kind, taken in a moderate quantity, so as not to overload the stomach, will be the most proper for asthmatics; and for ordinary drink they may use toast and water, or other cool, watery liquors. All vinous, spirituous, and fermented liquors, will be injurious to them. Tea will likewise be improper, from its being usually drank warm, and from its supposed power of weakening the nerves of the stomach. Coffee has been employed in asthma with much advantage when taken in a powerful dose. In the pure spasmodic kind, if made so strong as an ounce to the cup, without milk or sugar, and repeated, if necessary, at the distance of a quarter or half an hour, the fit has been entirely removed; and this practice has been continued by patients labouring under the disease for years, affording certain relief to their paroxysms. Some practitioners have, however, disapproved of the use of coffee.

Garlic is a vegetable production which is found of service to asthmatical people. Acids usually agree with them.

HYDROPHOBIA, RABIES, OR CANINE MADNESS.

The commencement of hydrophobia is marked by unusual anxiety, timidity, and sighing, severe pain in the epigastric region, difficult and painful deglutition of all liquids, accompanied by a sense of suffocation, dryness of the tongue and fauces, a small weak pulse, and slight pyrexia; its progress and close, by continual watching, laborious respiration, intolerance of light and the motion of air, a discharge of viscid saliva from the mouth, and not unfrequently convulsions.

Hydrophobia arises from the bite of a rabid animal, and that commonly of the canine and cat kind, as being those which are most domesticated. "As far as our knowledge extends of the habits of this poison," writes Dr. R. Williams (at page 225. Vol. II. of his Elements of Medicine), "no animal except those of the canine and feline races are subject to spontaneous hydrophobia. The dog, the fox, the wolf, and the jackall, comprise the different species of the genus canis, and in all these the disease may originate either spontaneously or by inoculation. The cat suffers in the same manner from both causes, and is the only animal of its kind at present known to have this twofold liability. The animals that have been mentioned, when labouring under this disease, in whatever manner contracted, generate a poison which is contagious, and capable of propagating hydrophobia probably to all warm blooded animals, certainly to every domesticated animal, birds as well as beasts, and also to man. Happily, however, man, and those animals in which hydrophobia does not originate spontaneously, do not secrete the poison, and consequently are incapable of further communicating the disease." Dr. Bardsley, in the article on this subject in the Cyclopædia of Practical Medicine, although he does not so absolutely limit the power of propagating the disease to the carnivorous animals spoken of above, yet says, that "there does not appear on record any indubitable case or history in which hydrophobia seemed to be communicated from one herbivorous animal to another." Many direct experiments have seemed to show that the saliva taken from patients labouring under this disease is incapable of producing it in animals by inoculation. Some doubt, however, has been thrown on this conclusion, in consequence of the appearance of hydrophobia in one of two dogs inoculated with this fluid by M. Magendie, in 1813; yet, as in all the other similar experiments, only negative results were obtained, the propriety of attributing the origin of the malady in this single instance to some other cause—as to previous infection, or to spontaneous development—naturally presents itself to the mind. One such exceptional result may shake our confidence in the innoxiousness of the matter experimented upon, but is insufficient to prove an infectious property inherent in it.

Many have doubted whether madness can arise in animals without preceding contagion. Some cases recorded by M. Rossi in the Mem. de l'Académie de Turin, tom. 6ième, evidently demonstrate, however, that animals previously healthy become capable, when enraged or irritated to a high degree, of communicating disease by their bite; a circumstance which, although long credited by the vulgar, wanted the support of direct evidence to establish it satisfactorily.

The fact of rabies sometimes arising spontaneously appears to be decidedly established by Mr. James Gillman*: for he records an instance where a dog that was chained in a yard, without any kind of intercourse with animals capable of inoculating the disease upon him, had it in its genuine form, which was verified by the effect produced by the saliva.

It does not appear, however, that madness is so prevalent among dogs in warm climates as in cold ones; for during a residence of many years in the West Indies, I never met with a single occurrence of the kind.

We are also informed by various writers, that canine madness is a stranger to South America; and, according to the testimony of Volney †, it is equally unknown in Egypt and Syria. Mr. Barrow ‡ also tells us, that, notwithstanding the heat of the climate at the Cape of Good Hope, and though the dogs are fed in the interior by the Caffres on meat in a highly putrid state, still the disease is unknown there. It is likewise mentioned by a missionary, that canine madness is a malady unknown in Paraguay, a country where beasts of every description are frequently destroyed both with the burning heat of the atmosphere and long thirst for want of water; which last is not to be obtained for many leagues in some places.

Rabies seems to arise from a specific contagion, which being once produced from causes unknown, continues to be propagated by the intercourse which dogs have with one another. It is alleged that the distemper is not communicable from one hydrophobous person to another, by means of a bite or in any other way; but this assertion may be thought to require further confirmation, although hitherto all experience is in its favour.

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* See his Dissertation on the Bite of a Rabid Animal.

† See his Travels, vol. i.

‡ Travels into the Interior of Africa and the Cape of Good Hope.

We have no proof that any of the secretions of a rabid animal but the saliva can excite hydrophobia. It is known to a certainty, that the specific poison of rabies exists in the saliva, but it has been a question how far the fluids and solids have been generally contaminated. The experiments of Mr. Gillman have furnished results which go far to prove that the infecting material of rabies is hardly to be found but in the saliva. Mr. Steele describes the occurrence of rabies (see Med. Gaz. XXV. p. 16.) in three lambs, the offspring of two ewes, and he conceives the disease to have been conveyed by the milk of the mothers, these last having been fatally affected some weeks after they had been bitten by a mad dog. It is said, too, that a whole litter of pigs died rabid, in consequence of their sow mother having been bitten while pregnant with them.

A large portion of such persons as have really been wounded by the bite of a rabid animal are never affected with the disease. Mr. Hunter mentions an instance of twenty persons being bitten by the same dog, and only one was seized with it. It is therefore obvious, that different persons are not alike predisposed to be acted upon by the same contagion, and likewise that the predisposition to receive contagion varies in the same person at different periods. The depressing passions, as well as other causes producing debility, probably may predispose the system to the action of this virus. The average proportion of the diseased to the number bitten is reckoned at one in fifteen by Dr. Colles; at one in twenty or twenty-five by others.

In the canine and cat species, about seven or eight days may be considered as a fair average of the shortest period in which rabies shows itself after the animal is bitten, and six or seven weeks the longest period from the date of the bite. In the human species, only a few days have in some instances elapsed previous to the symptoms showing themselves; but the most common time of their appearance is from twenty to forty days after the bite. There are no well-authenticated instances of the poison lying dormant longer than eleven or twelve months; and we may therefore consider a person pretty safe at the expiration of a year if no symptom then appears.

Rabies in a dog is attended with the following appearances: — he generally shows some marked deviation from his accustomed habits. In those which are domesticated — as lap-dogs — some strange peculiarities have been observed, as the picking up of the different little objects, such as paper, thread, straw, &c., or any thing which may happen to be presented to their notice. Sometimes they show a depraved appetite, and eat their own excrement, or lap their own urine. Still, however, in this stage they seldom attack any person unless irritated. Although a diseased dog often observes the usual obedience to his master, and evinces the same attachment, still he is usually extremely irritable and always treacherous, suffers any one to fondle him, but suddenly snaps or bites on the smallest provocation. In the progress of the disease, his eyes sometimes become inflamed, a purulent discharge issues from the lids. Instead of barking he often makes a dismal howl, and has usually a listless and melancholy appearance.

The term hydrophobia, as applied to dogs, is highly exceptionable, as the animal, instead of showing any dread of water, which has generally and popularly been considered as marking the disease, seeks it in most instances with avidity, and laps it incessantly.

A writer * on the diseases of dogs very justly notices the evil that this opinion has led to in lulling into dangerous security persons bitten by dogs actually rabid, and in particular refers to an instance in which an eminent physician, on being consulted by a person who had been bitten, recommended that no precautions might be taken, because he was informed the dog could drink. Another absurd popular error noticed by this writer is, the opinion that the worming a dog, which is merely removing the frænum from the tongue, will prevent his becoming rabid at any future time.

As rabies advances, the animal becomes extremely anxious and impatient, and has an inordinate desire to gnaw every thing around him. When chained or confined, he uses his utmost endeavours to break loose, and if he succeeds, he wanders about seeking other animals to bite, particularly some of his own species. It has before been observed, that frequently he does not avoid water, but laps it greedily; still in this stage of the disease he is often deprived of the power of swallowing it. Very often he has the appearance of being paralytic behind, and labours under an inflammation in his bowels, which occasions him to sit on his rump, seemingly in great pain. In the last stage, all the preceding symptoms are highly aggravated; he now becomes very feeble, his jaws drop as if paralysed, and the saliva runs from his mouth; he wanders or rather staggers about with scarcely the power of biting, and at length, being exhausted by disease, generally dies on the fourth or fifth day from its commencement. Few dogs survive the seventh.

In the human species, the general symptoms attendant upon the bite of a mad dog, or other rabid animal, are: —

The part bitten, after some time, begins to be painful; then come on wandering pains, with an uneasiness and heaviness, disturbed sleep and frightful dreams, accompanied with great restlessness, sudden startings and spasms, sighing, anxiety of countenance, and a love of solitude. These symptoms continuing to increase daily, the cicatrix of the wound becomes hard and elevated, a peculiar tingling sensation is felt in the part, and pains begin to shoot from the place which was wounded, all along up to the throat, with a straitness and sensation of choking, and a horror and dread at the sight of water and other liquids, together with tremors, and extreme irritability and sensibility of the whole frame. The person

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* See Canine Pathology, by Mr. Delabere Blaine, Professor of Animal Medicine.

is, however, capable of swallowing any solid substance with tolerable ease; but the moment that any thing in a fluid form is brought in contact with his lips, it occasions him to start back with much dread and horror, although he labours, perhaps, under great thirst at the time.

This appears to be a circumstance peculiar to the human race: for rabid animals do not evince any dread at water. The dread of fluids and inability to drink are generally persistent throughout the whole course of the disease: yet in some instances there has been an abatement of these symptoms, so that the patient has drank even freely, especially towards the close. Yet this circumstance has not prevented, nor seemed to retard, the fatal issue.

In the course of the disease, a state of extreme anxiety and restlessness comes on, attended with continued watching, great thirst, dryness and roughness of the tongue, hoarseness of the voice, and the discharge of a viscid saliva from the mouth, which the patient is constantly spitting out; together with spasms of the genital and urinary organs, in consequence of which evacuations are sometimes forcibly ejected. In general he is incapable of enduring light, or the motion of air; his respiration is laborious and uneasy, but his judgment is unaffected, and as long as he retains the power of speech his answers are distinct. In some few instances a severe delirium or violent madness arises, and closes the tragic scene; but it more frequently happens that the pulse becomes tremulous, feeble, and irregular, that convulsions arise, and that nature, being at length exhausted, sinks under the pressure of misery.

It is an acknowledged fact, that bites upon the face and hands are more dangerous and likely to convey the poison than when the tooth of the animal had previously passed through cloth, or leather, or any other intervening substance.

Our prognostic in this disease must always be unfavourable, as there is no authentic instance of recovery on record.

If we endeavour to give an account of the intimate nature, or, as it is usually termed, the pathology, of this disorder, we shall find now, as ever, the greatest diversity of opinion. The frequent discovery of more or less of redness, congestion, or inflammation of the mucous membrane of the throat and gullet, as well as the symptoms during life, have attracted the attention of some, in an especial manner, to these parts. Thus, Dr. G. Gregory is disposed to conclude, from the coffee-ground colour of the pharynx, epiglottis, and larynx, of the first three inches of the œsophagus, and of the whole of the trachea in the case which he has recorded in the thirteenth volume of the Medico-Chirurgical Transactions, that the symptom which gives its name to the disease is directly dependent upon some form of inflammatory action in the larynx and pharynx, and that the true nosological situation of hydrophobia is in the genus cynanche.

"Although" (writes Dr. Alison in his Outlines of Pathology) "a congestion of blood on the surface of the spinal cord has been described by some in cases of Tetanus, and although an unusual vascularity in the mucous membrane of the pharynx and œsophagus is common after hydrophobia, yet these appearances are certainly to no great extent. It is probable that they may be effects rather than causes of the morbid actions; and at all events they do not afford, by comparison with other cases of inflammation of these parts, any explanation of the peculiar phenomena of these diseases, nor invalidate the conclusion that they are both to be regarded as strictly diseases of the nervous system." We have here the expression of a more generally received opinion than that which precedes.

Dr. Marshall Hall refers the symptoms to the true spinal or excito-motory system, — his one key to all the phenomena of diseases which disturb the normal movements of the frame without affecting the sensorium; and defective only in this, that, if it indicate the true seat, it discloses nothing as to the nature of the disturbing action, and leaves us well nigh as uninformed as we were before.

Inspection of the bodies of those who have died of hydrophobia have brought to light no uniform lesions to which the symptoms may be attributed. It is common, indeed, to read of increased vascularity of the lining membrane of the throat, extending more or less into the gullet or windpipe; or this may exist in the mucous membrane of the stomach; or be most remarkable in the ramifications of the bronchi, while the lungs are found in a state of congestion. Frequently, also, the substance or membranes of the brain, or spinal marrow, exhibit various degrees of vascular engorgement, while there may be increased effusion of serum in the cavities, or diminished consistence of the organs themselves. "We find," says M. Jolly, in the article Rage in the Dictionnaire de Médécine et Chirurgie Pratiques, "the substance of the brain and spinal marrow softened, more or less injected, loaded with blood, and serum, sprinkled with scarlet spots more or less vivid, and of greater or less extent; the sinuses distended with black and liquid blood, and the mucous vessels, which overrun the cerebro-spinal membranes, much ingested, and the plexus choroides gorged with blood." He adds, that the blood is generally fluid, and that the bodies undergo rapid putrefaction.

But that none of these appearances is essential to the existence of the disease, is proved, as stated by Dr. Bardsley, by the fact that in several cases on record, in which post-mortem examinations have been made by eminent and experienced pathologists, no morbid appearances have been detected in any organ or tissue of the body.

On opening rabid animals, slight marks of inflammation about the epiglottis and pylorus, with occasionally some livid marks in the villous coat of the stomach, are now and then to be perceived; but sometimes no appearances of inflammation either in the stomach or elsewhere are to be observed, on inspecting the bodies of these animals. The membranes of the brain are usually more or less congested, while the medulla oblongata, which gives origin to the eighth pair of nerves, is in every case affected, its substance being vascular, and the membranes at that part congested.

As in rabies, when once manifested in the system, the power of medicine and all human skill have failed, our views should be early directed to prevent the accession of the disease; and for this purpose the most effectual expedient is speedy excision of the wounded part. Immediately, therefore, on the infliction of the bite, or as soon afterwards as possible, ablution with warm water and soap should be had recourse to, and be continued until professional aid is procured. On the arrival of the surgeon, a free and complete excision of the bitten part is to be made, the knife being carried to a sufficient depth, so as to ensure its complete removal. The excised part being removed, ought carefully to be examined to see if there is any place in the piece through which the dog's teeth appear to have passed; and in case there is, the excision ought to be carried still deeper than before. Should the knife, on a close examination, appear to have entered the wound made by the dog's teeth, it may be advisable to recommence the operation with a clean knife, lest the other, being contaminated by its contact with the wounded parts, should inoculate the sound ones with the canine virus.

The sooner that the wounded part is extirpated after the accident the better; but it will be right to do it even at the distance of several days, rather than that the person should be debarred the chance which excision affords; as there is great reason to presume that the canine poison does not enter the system so quickly as a variety of others are perceived to do.* This conclusion we are somewhat authorised to draw, as in several well-attested cases many weeks, nay months, have intervened between the accident of being bitten, and the appearance of the disease. If the bite be of long standing, and the wound consequently cicatrised, and there be a certainty that the animal by which it was inflicted was really rabid, it should immediately be laid open, cauterised, and caused to suppurate.

After excision, ablution is again to be performed with a solution of volatile alkali in water, and when the flow of blood begins to cease, suction with a powerful cupping-glass may be resorted to. The alternate employment of ablution and the exhausted receiver may be continued for some hours. Having proceeded thus far, caustic—such as the argenti nitras or potassa fusa—may be applied to the wound, so as to produce a slough in the first instance, and afterwards a purulent discharge for some weeks. By this mode of treatment many persons have been known to escape the disease, while others who have been bitten by the same animal, and who neglected these means, have become affected.

When the bite has been limited to a small portion of the skin and soft parts, so that complete excision of all that have come in contact with the teeth can be easily and certainly effected, we see no occasion for the employment of other means in addition to the knife. In cases, however, of more extensive injury, or where the teeth may have penetrated between bones, so that this perfect removal of every point which may possibly have been touched by the virus is difficult or impracticable, the use of caustic and the other means mentioned above should never be omitted. We cannot thus, indeed, obtain perfect security for the patient, but the smallest diminution of his peril would justify our proceeding. It is only after the actual appearance of hydrophobic symptoms that we think measures such as these undesirable, inasmuch as they have proved unavailing in every one of the many instances in which they have been adopted. Dr. R. Williams, indeed, deprecates excision at any longer interval than half an hour after the bite, and supports his opinion of the inefficacy of such an operation when longer delayed by weighty facts and reasonings. Our recommendation is founded on the principle that it is better to resort to means that may be unnecessary or ineffectual, than to omit any, even the slightest, chance of preventing the production of so dreadful a malady. We write, of course, on the supposition that the animal by which the bite has been inflicted is known or believed to have been mad.

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* See Mr. Gillman's Prize Dissertation on the Bite of a Rabid Animal.

It sometimes happens that the wounded or bitten part is so situated as not to admit of excision, or from the timidity of the patient, he cannot be persuaded to submit to the operation. In this dilemma we must be content to have recourse to a careful and persevering ablution, and afterwards to scarification and cupping, bathing the parts with warm water, to promote a free flow of blood, and assist in washing away any remaining particle of the poison. With respect to the fluid to be employed at first in the ablution, a weak solution of volatile alkali, in the proportion of one part of the alkali to four of water, may be as proper as any we can use. With this solution, which is fully capable of dissolving the saliva, the wounded part should be freely washed, and injections of the same with a syringe be forcibly made into the wound. After this, water may be substituted, to assist in washing away any remaining particles of the canine poison, and then it may be touched with caustic, the argenti nitras, or the potassa fusa. Ligatures above and below the wounded part have been recommended during the ablutions, by Dr. Percival, when they can be put on.

The bitten part must be destroyed to the bottom by repeated applications of the caustic. To assuage the inflammation caused thereby the wound is to be dressed for some time with poultices, and afterwards with acrid dressings and hot digestives, to remove the eschar, create a discharge, and drain the injured parts.

We find Dr. Bardsley advocating this maintenance of a long continued discharge from the wound by means of sprinkling it with powdered cantharides, on the ground of the success which followed this plan of treatment (combined, however, with mercurial salivation) in the hospitals of Breslau and Zurich. Mr. Youatt, on the contrary, trusts to free cauterization by nitrate of silver, or to excision of the bite, and advises after this destruction of the part, to adopt the mildest means for speedily healing the wound. No failure of this plan, as practised by himself, was observed in four hundred cases.

Without venturing to decide the point at issue, we can only remark that, although we are familiar with the effects of local discharges in restraining inflammatory actions or congestive conditions in other parts, or in the system at large, we know of no distinct evidence whereby it is shown that specific morbid or other poisons can thereby be eliminated from the vicinity of the parts which give rise to the discharge. It is known that gonorrhœa and chancre may coexist in the same subject; but it is not known that the discharge of the one can abstract the virus of the other complaint. We believe the kidneys, the skin, lungs, and other organs to be the depurators of the blood; we know that poisons and medicinal substances escape from the system in the urine and other secretions; there is reason to believe that the materies morbi passes off through the same channels in other instances, as in gout; but there is no ground for supposing that artificial discharges produce the same result; and whether the virus be absorbed by the lymphatics, or introduced at once into the veins, there is no reason for supposing in either case that it can be made to turn back in its course, or even be arrested in its onward progress. To us, therefore, the practice here referred to seems based on no sound analogy. Diuretics, and especially the continued use of large quantities of that simplest of all diuretics, water, or of other diluents, seem best calculated to promote the elimination of such portions of the poison as may have been absorbed.

In addition to these modes of prevention, it has been strongly recommended to commence, very speedily, a course of mercurial unction, which is to be continued regularly, and to be applied in a considerable quantity at once, so as to occasion some degree of salivation; to expedite which, the submuriate of mercury may be given internally night and morning, and warm bathing may be used occasionally.

Although medicine has hitherto proved ineffectual in most, if not all, of the cases where the disease had fully established itself, still it is necessary to mention the plan which has usually been pursued on such occasions.

From certain symptoms which attend on hydrophobia — such as heat, thirst, restlessness, fever, difficulty of breathing, priapism, watchfulness, and furor; from the inflammatory appearance usually observed on dissection; and from the successful employment of venesection in some supposed cases of rabies — this remedy has been much used by many practitioners.

Where the true characteristics of the disorder were really present, it had not heretofore afforded relief; but two successful cases have lately been reported in the 167th No. of Phillips's Medical Journal, by Dr. Shoolbred, of Calcutta, in which bleeding ad deliquium animi, and repeating the operation at intervals as long as firmness of arterial action or the symptoms of hydrophobia remained, completely removed the disease. In these instances venesection was resorted to immediately on the disorder becoming apparent. The cure in these, although attributed by Dr. Shoolbred to blood-letting alone, has by some been supposed to be owing to the combined use of mercury at the same time.

Dr. Parry says, that with respect to the proximate constitutional character of rabies, there cannot be a greater mistake than to suppose either that the fever consequent on the disease is of the inflammatory kind, or that its peculiar symptom arises from local inflammation of the fauces, the cardia, or any other part; and this, as has been already shown, is the opinion now generally received.

Strong evidence in proof of the utter inefficacy of large blood-lettings has been collected by Dr. Robert Williams. He cites Drs. Hamilton, Fothergill, and Mead, as authors who had found it to be in vain. He mentions, Dr. Rutherford as having taken in one instance sixty ounces without success; Bousquillon as having carried this practice to the uttermost without retarding the fatal issue; Meniere as having taken fifteen pallettes in one case, three pounds of blood in another, without the mitigation of any symptom; a case in which seven pounds were taken with no better result; one in which Dr. Elliotson conceived that this course had aggravated the disease, and accelerated the death; another, fatal in twenty-four hours, in which one hundred and fifty ounces had been lost; the failure of this treatment in the hands of Magendie and Dupuytren; and the experience of M. Breschet, that the more he bled his patients, the sooner they seemed to die. After such trials as these few will be disposed, as indeed few or none have of late years been disposed, to put any trust in this remedy. The use of mercury as a preventive has already been mentioned: its curative powers have also been tested upon those in whom the disease had unequivocally manifested itself, and some success has been claimed for this treatment. In the fourth of Mr. Hewett's cases of hydrophobia consequent on the bite of a rabid jackall, published in the thirteenth volume of the Medico-Chirurgical Transactions, mercury was employed both in friction and by the mouth; while a strong ammoniacal emulsion, made with liquor ammoniæ, olive oil and water, was given by tea-spoonfuls: and we are told that as salivation advanced deglutition became less difficult, and the mind more composed, and the patient eventually recovered. There is, however, some reason to doubt whether this was really an example of the disease; or merely a condition of extreme nervous excitement in one who had certainly been bitten by the rabid animal, and had perhaps witnessed or heard of the symptoms as exhibited by others who had suffered fatally. We have no hesitation in expressing our conviction that in the case of recovery from hydrophobia under mercurial salivation, published in the first volume of the Lancet for 1847, the actual existence of the disease has not been satisfactorily demonstrated. A third case of recovery from supposed hydrophobia is narrated (at page 338. of the Medical Gazette, vol. xxi.) by Mr. W. Du Heaume of Jersey: and it is to be remarked, that in this case also the patient was salivated; yet the evidence of the disease being properly designated as hydrophobia is not very satisfactory. If mercury has even seemed to cure the disease, this is more than can be asserted of most other medicines.

From considering that the poison of a rabid animal produces an excessive increase or morbid alteration of the natural sensibility, and that those who are bitten by a mad dog, or other animal so diseased, are in a perpetual state of restlessness, from the beginning of the attack to the end, that they can ill bear the impression of objects upon the senses, that the least noise is offensive, and that all feeling is painful, — opium has been much employed; and considering that the poison produces these effects, we might be induced to suppose that it would have proved a valuable and powerful remedy. Many cases are, however, on record, where, although it was given to the quantity of 180 grains in the space of fourteen or fifteen hours, it failed to produce any good effect.

Opium has also been administered by injection into the veins. Thus M. Dupuytren employed in this way from twelve to fourteen grains of opium dissolved in several ounces of distilled water, and injected at three different times on the very first day on which the disease was well marked. Each time the patient seemed to be calmed; on one occasion there was a complete calm during three hours; nevertheless he died in three quarters of an hour after the last injection. No better success has followed similar trials in the hands of others (Diction. de Med. et Chir. Prat., art. Rage.) In Dr. Babington's case (published in the 21st volume of the Medical Gazette) at least twenty-eight grains of muriate of morphia were administered within about fourteen hours. Some rest was obtained after the exhibition of two three-grain doses at the interval of half an hour, but the symptoms were unsubdued; the dose of morphia was increased without controlling his excitement or convulsions: and he died in a state of coma after an average duration of the disease.

In this case a belladonna plaster was applied to the spine after it had been rubbed with blistering ointment; without, as it appeared, affording even temporary relief.

In a child treated at the London Hospital, extract of belladonna was applied to the raw surface formed by excising the cicatrix of the bite in the arm; and one grain of the same substance, with three of calomel, was given every hour, with apparent alleviation at first; subsequently rapid aggravation of the symptoms, and death in thirty hours. Dr. R. Williams, indeed, shows that this remedy has been long ago resorted to in such doses as would be fearful under other circumstances, yet without the slightest benefit.

In searching for the antidote to this bane, says this writer, all the most powerful remedies of every class have been tried,—as mercury, iron, arsenic, nitrate of silver, camphor, musk, opium, belladonna, cantharides, turpentine, tobacco, and indeed all the most potent agents that have been at any time introduced into the pharmacopœia. It must be admitted that all have failed. M. Jolly, in the article Rage, already quoted, tells us that sea-baths, baths of surprise, the bite of viper, proposed as stupefying agents to diminish the excessive excitement of the nervous system, have alike failed: patients have been suddenly plunged into the Seine, and the convulsions have continued during immersion as before. They have been covered with blisters, yet the convulsions have become neither stronger nor weaker. It has only been remarked, that if the individual attacked with hydrophobia is kept in a darkened room, undisturbed by noise, and without being tormented in any way, the convulsions are less strong, the attacks less frequent, and he dies twenty or twenty-four hours later than under other circumstances.

The inhalation of æther was tried by Mr. Spencer Wells at Malta, but could not be continued so as to produce anæsthesia, or insensibility, on account of the convulsions which it excited.

We have heard that chloroform has been resorted to in two instances, yet, whatever the immediate effect, the issue was unfortunate. In one case (that of Mr. Wells) the extract of belladonna, applied freely to a blistered surface on the nape of the neck, seems to have had some calming influence: it is doubtful whether it may not have shortened the course of the disease.

Hydrocyanic acid, of the pharmacopœial strength, was given at first in doses of five minims every quarter of an hour to a boy seven years old by Dr. Todd; one dose of ten, and two of twenty, minims were also given in the course of the disease. A frigorific mixture, applied to the throat and spine, seemed to ameliorate all the symptoms and bring back the power of swallowing; yet it depressed the circulation so much as to require an intermission of its use. This patient underwent the common fate. In one case Dr. Addison commenced the treatment with two minims of croton oil, given every half hour till it acted. This produced violent purgation, soon stopped by a drachm of wine of opium; and forty minims of the liquor plumbi diacetatis, the latter given every hour. This patient appeared relieved after three doses of this medicine, and drank two half pints of porter; yet after this each dose seemed to make him worse, he became very violent, at last suddenly calm, and five minutes later he was dead.

As there is little reason for supposing that the want of drink or nutriment is the ultimate cause of death, there can be no propriety in attempting the introduction of nutritious fluids into the stomach by means of the stomach-pump, or through tubes passed down the œsophagus. Such a proceeding would, we conceive, be always distressing to the patient, extremely difficult of execution, and often impossible. If it be thought desirable or necessary to give support, it had better be introduced in the form of a glyster. But it is to be remembered, that where, as in the case last cited, the patient has regained the power of swallowing, and has drunk freely, his fate has nevertheless not been thereby delayed.

COLICA, OR COLIC.

Colic is a painful distention of the whole of the lower region of the belly, with a sense of twisting round the navel, accompanied by griping pains, and often attended with vomiting, costiveness, and a spasmodic contraction of the muscles of the abdomen.

The disease is produced by various causes,—such as crude and acescent food, flatus, a redundance of acrid bile, long-continued costiveness, hardened fæces, certain metallic poisons, metastasis of gout or rheumatism, hysteria, the application of cold and moisture, or the presence of unwholesome substances. It has commonly been considered as being of different species, and has been variously denominated, according to the cause which has given rise to it, as the bilious, the flatulent, and the hysteric; but in all of them the proximate cause seems to be the same,—viz. a constriction, obstruction, or paralysis of some part of the intestines.

In the bilious colic there is loss of appetite, bitter taste in the mouth, costiveness, and a vomiting of bilious matter, attended with an acute pain all round the region of the navel; and as the disease advances, the former becomes more frequent, and the latter more severe and lasting.

In the flatulent colic there is great costiveness, attended with pain, soreness, and griping of the bowels, in almost all cases relieved by a certain degree of pressure with the hand, a rumbling noise, distension of the stomach, an inclination to throw up, and coldness of the extremities.

In the hysteric colic there is nausea and sickness at the stomach, accompanied with severe spasms, costiveness, and dejection of spirits.

The disease, when rising to a violent height, and attended with a stercoraceous vomiting, obstinate costiveness, and an evacuation of fæces by the mouth, constitutes what is called the iliac passion. In this, as well as in intus-susceptio, the peristaltic motion is inverted, and a degree of inflammation is the consequence.

The colic is to be distinguished from enteritis by the absence or trifling degree of fever, by the state of the pulse, which is often natural, and when frequent full, and by the diminution of the pain when pressure is made on the abdomen: whereas in enteritis there is a considerable degree of fever, the pulse is quick and small, and the abdomen extremely tender to the touch.

When the pain remits, or shifts its situation, not being obstinately confined to one place, and when the patient experiences considerable ease after a discharge either of wind or fæces, and stools are obtained, we may have reason to expect a favourable termination to the disease; but the sudden cessation of pain, with the costiveness remaining obstinate, cold sweats breaking out, a weak tremulous pulse, frequent syncope, and the ensuing of hiccups, denote a state about to terminate in death.

When the disease proves mortal, the usual appearances to be observed on dissection are, perhaps inflammation on the surface of the intestines, distention and irregular contraction of some particular part of the tube, a passing of one portion of it within another to a considerable extent, the part received within the other being in a contracted state, or probably gangrenous, or obstruction from the impaction of the contents of the intestines.

"As soon" says, Dr. Copland, "as a practitioner sees a patient in colic, his first object is to ascertain whether there be strangulated or incarcerated hernia, or either tension, tumefaction, or retraction of the abdomen, or circumscribed tumour, or hardness in any part of it, or in its vicinity." It should be matter of inquiry too, we think, whether there be any local tenderness, in order that we may by these researches establish or negative the probable existence of any internal impediment to the passage of the contents of the intestines. If a strangulated hernia be detected, the treatment must be such as is suitable to that disease. Very analogous cases are those in which the bowel has become strictured in some point, by a band of false membrane, or by some other source of internal strangulation in which, though the uncertainty of the diagnosis might prevent recourse to an operation for relief, the ordinary means of treatment would be inappropriate and injurious. With regard to the determination of their exact nature, and the measures to be pursued for their relief, no general rules can be laid down: they must be considered for the most part as beyond the power of remedies; and must be left to the intelligence and ingenuity of the medical attendant, who in particular cases may be enabled to devise a cure.

Supposing, then, that we have to treat a patient suffering from colic, and we have learned, as far as we can, that there is no external hernia of, nor internal ligature upon, any part of the intestine, and that there is no inflammation present, nor reason to suspect the action of lead or other poison, what measures are we to adopt for his relief? For allaying the vomiting, a single dose of calomel of from two to five grains may be given in a teaspoonful of thick gruel; and after an interval of three or four hours, during which the stomach is left at rest, or only a few mouthfuls of gruel have been sipped; or a wine-glassful of soda-water has been taken with or without a teaspoonful of brandy, the following draught * should be given and repeated every four hours. This will probably soon allay pain and quiet the vomiting even, though no stools be obtained for some hours. We should continue the use of this draught at the stated hours, notwithstanding the first one or two of them may have been brought up. A second or third will generally be retained, and exert such gentle action on the bowels as should precede the use of stronger cathartics. If when five or six of these have been taken, still no evacuation is obtained, we should give an aperient pill † with each draught, continued with the same frequency as before. And at the same time that, or before, we make this addition to our treatment, we may have recourse to a clyster, injecting in the first instance as much lukewarm water as can be introduced without violence and without producing pain. Where there is much flatulence, fifteen or twenty drops of the compound spirit of sulphuric æther may be advantageously added to the draught already recommended as soon as it stays readily on the stomach.

With the same view of relieving flatulent distention, the enema of turpentine may be employed when an evacuation of the bowels has been obtained. It will be seen that we are not of the number of those who conceive that all pain is at once to be stopped with an anodyne, and every sick stomach is immediately to be filled with carbonic acid gas. The first aim of the practitioner should in all cases be to remove the cause of the existing distress: it is only when he has wholly or partially failed in this object that he should try to dull the sensibilities of the sufferer to an evil which he has been unable to eradicate. If there be no nausea or vomiting, the calomel may be omitted altogether, or a single grain of it may be given on alternate nights for the purpose of improving the hepatic secretion, and thus diminishing the production of flatus. In the flatulent colic of old people a warmer draught ‡ has sometimes proved very useful; and this is suited to all cases where the constipation is not

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* ℞ Magnesiæ Carbonat. gr. xv. Misturæ Acaciæ, ʒij. Syrup. Zingib. ʒj. Aquæ Pimentæ, ʒix. Magnesiæ Sulphatis, ʒj. Misce; fiat haustus quartâ quâque horâ sumendus.	* Take Carbonate of Magnesia, fifteen grains. Mixture of Acacia, two drachms. Syrup of Ginger, one drachm. Pimenta Water, nine drachms. Sulphate of Magnesia, one drachm. Mix for a draught, to be taken every four hours.
† ℞ Pulveris Scammonii, ℈j. Hydrarg. Chloridi, gr. v. Misturæ Acaciæ, q. s. Fiat massa in pil. vj. dividenda; sumat j. quartâ quâque horâ donec alvus soluta fuerit.	† Take Powdered Scammony, one scruple. Calomel, five grains. Mucilage, enough. To make a mass, to be divided into six pills, one of which is to be taken every four hours till the bowels are relieved.
‡ ℞ Decocti Aloes Comp. Aquæ Pimentæ, ā ʒvj. Spiritus Ammoniæ Aromat. ♏xv. Fiat haustus bis vel ter die sumendus.	‡ Take Compound Decoction of Aloes. Pimenta Water, of each six drachms. Aromatic Spirit of Ammonia, fifteen minims. Make a draught, to be taken twice or thrice daily.

obstinate. We know of no special treatment of the so-called hysteric colic; but if we are to understand by this the malady in which with great uterine irritation there are pains about the hypogastrium, and often distention of the abdomen, and costiveness, we know that in this Dover's powder[*] with mild aperients, as castor oil, gives more relief than all the aromatic draughts in the world. If the patient be plethoric, a small general bleeding may be employed with benefit in the first instance. There is no objection in any case to endeavour to relieve pain by warm fomentation, and for this purpose flannels wrung out of warm water are as good as poppy-heads, or any of the less simple expedients which the nimis diligentia of medical men has introduced.

If there be reason to suspect that retrocedent gout or metastatic rheumatism, by attacking the muscular coat of the intestine, has given rise to colic, we may add five drops of the tincture of colchicum to each of the draughts already recommended; but we confess that we have had no experience of such cases, and speak only inferentially as to their treatment. We are not convinced of the existence of either of these sources of colic.

A sure and safe method of employing mechanical dilatation is by injecting a large quantity of tepid water by a proper-sized syringe, which will throw it into the rectum in a continued stream, and with some force; the patient drinking copiously at the same time. Some persons have borne two gallons to be injected in this way, and the cases were attended with the desired success. In those instances where there is an accumulation of hardened fæces in the colon, these large injections seem to be a powerful remedy, as they serve the two intentions of dilating the passage and of softening the fæces.

Obstinate constipations, arising from an accumulation of indurated fæces in the rectum, and attended with severe colic pains, which resisted the usual means of relief, have been removed by introducing the finger, or scoop used in lithotomy, in ano, and then breaking and loosening the scybala. Two cases of this nature are recorded in the Edinburgh Medical Commentaries for the year 1795, which undoubtedly suggest an important caution — to advert to the cause above pointed out, in cases of obstinate costiveness and colic, where the usual means of aperient medicines and clysters have had a reasonable trial, without the desired effect.

Throwing cold water on the extremities, or applying pounded ice, snow, or towels wetted with a solution of muriate of ammonia and nitre in cold water, to the region of the belly, have been found,

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[*] ℞ Liquor. Ammon. Acet. ʒiij.	[*] Take Liquor of Acetate of Ammonia, three drachms.
Pulv. Ipecac. Comp. gr. v.	Compound Ipecacuanha Powder, five grains.
Mistur. Camphor. ℥j.	Camphor Mixture, an ounce.
Syrup. Croci, ʒj.	Syrup of Saffron, one drachm.
Misce; fiat haustus ter die sumendus.	Make a draught, to be taken thrice a day.

in some cases of obstinate constipation, to have been attended with a good effect, where all other remedies have failed.

It is well known, that many people have a skin of so irritable a texture, that if exposed to cold it will bring on a purging. In all constitutions cold increases the peristaltic motion of the intestines; and again, if cold is applied to the external surface of the body, even although the urinary bladder is not full, there will be a strong inclination to empty it.

If the means which we have above advised are not successful within two or three days, there will generally be such an aggravation of the symptoms as must lead to the abandonment of a purgative treatment altogether, and a deliberation upon the question whether we are merely to soothe the sufferings from approaching death, or whether any operation may be advised. The careful introduction of a long elastic tube per anum into a greatly distended colon has in one instance been known to remove the obstruction, to relieve the distension above it, and to effect the recovery of the patient in a case where ordinary clysters had before been tried in vain.

Whether, in any cases where the persistence of the symptoms convinced us of the existence of some ligature upon the bowels, the situation of which could be pretty accurately ascertained, it would be justifiable to make an opening into the abdomen, while as yet no extensive inflammation had taken place, and before the powers of the patient were too far sunk; or whether, again, the formation of an artificial anus might be attempted, so as to avoid an obstruction which could not be overcome; or whether it might be safe or justifiable to give escape to an excessive quantity of flatus by the puncture of a trochar, as is sometimes successfully practised in the case of oxen, — are questions upon which no general opinion can be expressed, but which must await the decision which may befit the circumstances of each particular case.

Those who are subject to attacks of the colic should cautiously abstain from all kinds of crude, flatulent food, and from fermented liquors; they should also avoid as much as possible any exposure to wet and moisture, taking due care to obviate costiveness by a timely use of some gentle laxative, and to wear flannel next to the skin.

We know of no marked line of demarcation by which to distinguish, at the outset, cases of mere temporary obstruction of the bowels from those dependent on some mechanical impediment to the action of the intestines. We have therefore appended some extracts from recent remarks of Mr. Phillips on abdominal obstructions, in which the graver cases of colic so often terminate. "Of the 169 cases which constitute the foundation of my remarks, 63 were instances of imagination, 16 were caused by the pressure of tumours from without, 19 were the results of stricture from disease of the parietes, 11 were the result of intra-intestinal tumours, hardened fæces or concretions, and 60 were caused either by constriction, by bands, by adhesion, by the passage of the intestine through some abnormal opening, or by a twisting of the intestine upon itself."

The impression which must be produced by reading the preceding cases is this, that, no matter what may be the cause of the obstruction, no certain remarkable difference is observed in the more prominent symptoms by which it is accompanied. There are in all abdominal pain, abdominal tension, obstinate constipation, and sickness; but, in the mode of their occurrence, it would be difficult to point out any distinct difference. Thus constipation, abdominal pain, or uneasiness, with tension and sickness of the stomach, are present in greater or less intensity in most cases; but there is no certain and definite line to be drawn, either as to time at which they occur, or the severity with which they are ushered in, whether the obstacle be a biliary calculus or a band of false membrane.

Of the cases to which I have referred, 169 in number, and subjected to various modes of treatment, certainly 133 terminated fatally.

There is no doubt that a large number of cases of obstinate constipation do yield to ordinary treatment; but it is probable that in many of those cases the obstruction did not depend on mechanical causes at all.

Although no reliance can be placed on purgatives, on mercury, on opium, or any variety of injection, and although, in many cases, they seem to aggravate the suffering, yet, as it is unquestionable that in some cases they have been administered with relief, we cannot advise that they should be discarded, but we doubt the prudence of continuing to use them beyond two or three days.

The interference by surgical operation is justifiable when three or four days have passed without any relief from ordinary means (provided the constipation be complete and vomiting of facæal matter continue), because it affords a greater chance of the preservation of life than ordinary means.

If it be found impracticable to remove the cause of the obstruction, or imprudent to make any extended search for it, relief may be obtained by forming an artificial anus as near as may be prudent to the seat of the obstruction.

COLICA PICTONUM, OR THE DRY BELLY-ACHE.

The characteristics of this disease are, obstinate costiveness, with a vomiting of acrid or porraceous bile, pains about the region of the navel, shooting from thence to each side with excessive violence, strong convulsive spasms in the intestines and abdominal muscles, with a tendency to a paralysis of the extremities.

The public are indebted to the laborious and careful investigations of the late Sir George Baker for a thorough knowledge of the true source of this disease. An account of these will be found in the first three volumes of the Medical Transactions published by the College of Physicians. Francis Citois, according to this author, was the first writer who attached the name of Colica pictonum to the disease, then very prevalent among the people of the province of Poictou, in France. Hence it was appropriately called the colic of the people of Poictou. The real cause or source of the disease was not ascertained till a much later date, when the inquiries of Sir G. Baker, already referred to, and first published in the year 1767, proved the identity of the disease as occurring among the wine-drinkers of France, the cyder-drinkers of Devonshire, and the rum-drinkers of the West Indies; and established, by the clearest evidence, that in these instances and many others, as well as in the case of those who were known to be exposed to the influences of lead, this form of colic was universally occasioned by the introduction of some compound of that metal into the system. The records of medical science scarcely furnish us with any discovery more creditable to its author, or more beneficial to the world at large. All subsequent experience has only tended to prove the soundness of his conclusion.

Colica pictonum comes on gradually, with a pain at the pit of the stomach, extending downwards to the intestines, particularly round the navel, accompanied by eructations, slight sickness at the stomach, thirst, obstinate costiveness, with sometimes a frequent but ineffectual desire to evacuate the contents of the bowels. After a short time the pains increase considerably in violence, the whole region of the belly is highly painful to the touch, the muscles of the abdomen are contracted into hard, irregular knots or lumps, and appear drawn towards the spine; the intestines themselves exhibit symptoms of violent spasm, insomuch that a clyster can hardly be injected from the powerful contraction of the sphincter ani; and there is constant restlessness, with a frequent vomiting of an acrid or porraceous matter, but more particularly after taking either food or medicine.

The digestions, when obtained, are often hard and lumpy, so as to have been compared to sheep's dung. The state of retraction of the abdominal muscles, as described above, is by no means a constant one; sometimes, on the contrary, they are much distended. There is this peculiarity, too, about the tenderness of these parts, that, though a light and unequal touch may occasion much pain, even and firm pressure is found to give relief; and this is an important particular in which colic differs from enteritis and some other diseases of an inflammatory nature. The fact is, moreover, that in colic there is often no tenderness at all. Besides the abdominal pains, but succeeding or alternating, seldom or never co-existing with them, are pains in the back and loins, or in the limbs, which much resemble those which accompany rheumatism. One distinguishing characteristic is, that the pulse is generally slow, not exceeding in frequency the healthy standard; the skin, too, is of its natural temperature, and, in short, the disease, when simple and uncomplicated, commences without rigors, and runs its course without pyrexia. We do not deny that intense pain or spasm, or both, may induce an inflammatory condition, and then there may be a quick pulse and hot skin, and true abdominal tenderness, and then, too, it may be right to bleed; but such symptoms are very rare, and such treatment is generally to be deprecated.

If the disease be neglected or ill-treated, it will last weeks, or even months, with now and then a truce for a few days, and terminate at last in a peculiar species of palsy of the upper extremities, and sometimes, though rarely, of the lower also; or deafness, blindness, delirium, and epileptic fits coming on in death. If it be promptly and judiciously treated, it is seldom attended with danger, and admits of a speedy cure, as far, at least, as the colic is concerned: the paralysis, however, is much less tractable. Preventive measures have done much for the abatement of this disease, and are adequate, if universally adopted, almost to its total extinction.

In the year 1840, Dr. Burton called attention to a peculiar effect of lead upon the gums, as resulting from its absorption. His memoir is published in the twenty-third volume of the Transactions of the Medico-Chirurgical Society for 1840; and we extract from this a description of his discovery, verified, as it since has been, by general observation. He says, at p. 66.,—"The other phenomena, referrible to the state of the mouth, noticed on these patients (fifty suffering from lead) were neither peculiar nor invariably present. The edges of the gums attached to the necks of two or more teeth of either jaw were distinctly bordered by a narrow leaden-blue line, about the one-twentieth part of an inch in width, whilst the substance of the gum apparently retained its ordinary colour and condition: there was no invariable tumefaction, softening, or tenderness about them; neither was there any peculiar fætor of the breath nor increased salivary discharge to be observed on any of the fifty patients.

"With reference to the state induced by lead, it is to be remembered," remarks the author, a little farther on, "that the gums and breath of patients who frequent hospitals (and by whom the practice of cleaning the teeth is habitually neglected) very often present an unhealthy aspect, independently of constitutional disease arising from lead; and amongst the fifty patients who were examined under the influence of this metal, as well as others not under its influence, the gums of many were either ulcerated, tumid, or partially detached from the teeth by incrustrations; but even on the patients with ulcerated gums, the peculiar leaden-blue border-line was distinctly visible."

We believe, with Dr. Burton, that this sign will enable physicians to establish, with increased facility, a precise diagnosis in derangements of health depending on the unsuspected presence of lead; but we believe also, from actual observation, that colic may be produced by lead without the appearance of this diagnostic mark. We have ourselves, in a case of hæmoptysis, seen colic accompany the exhibition of lead without the occurrence of this sign, even when diligently looked for. Hence we conclude, that, though very significant when present, its absence does not universally negative the fact of the impregnation of the system by that metal.

We have spoken above of a very important confirmatory sign of the absorption of lead, and we proceed to mention a very valuable means of detecting its presence upon the surface of the body. Dr. Pereira has recommended and employed a sulphurous bath, made by dissolving four ounces of sulphuret of potassium in about thirty gallons of water; and by the use of this, in the cases of workers in lead, he has often proved the presence of that mineral about the neck or arms, or in the fissure of the nates, or in other parts, as indicated by its blackening effects, in persons who had supposed themselves to have been previously completely freed from it. His observations have established the necessity of resorting to this, or some similar expedient, for proving the complete cleansing of the body from all such adhering sources of mischief; and have thrown a doubt upon the supposed efficacy of cold or other causes in reproducing colic or other symptoms of poisoning by lead, without fresh exposure to its influences in their former employments, by showing that, in all probability, the sufferers carried about with them enough of the poison to be subsequently introduced into their systems to the prejudice of their health.

One of the most frequent maladies which is prone to supervene upon this colic is a peculiar form of paralysis, attacking principally the upper extremities, and known as a dropping of the hands. Persons thus affected are generally observed to suffer in both arms, and to lose, more especially, the power of extending or firmly closing the fingers. The power of flexing the forearm upon the arm is seldom altogether lost; but the hand hangs slightly flexed at the wrist, and more or less pronated, with the fingers somewhat bent. The whole arm, too, can be raised at the shoulder, but with less power than in health. We have seen, where the legs have been affected, the inner edge of the foot drawn upwards, as if the weakened tibialis anticus more than counterbalanced the antagonising action of the peronæi.

The first of these varieties of palsy is very common in those who have suffered from repeated attacks of this colic; the latter we have witnessed only once.

Other nervous or cerebral affections, of a still more formidable character, are apt to arise in the worst colics, so as to demand a notice in this place. We shall borrow our description of them from a memoir by M. V. Nivet, published in the Gazette de Paris for January 1837. Delirium and convulsions, he says, often exist together; at other times one of them only is observed. Most frequently they are found to come on during the continuance of a very severe colic, when the malady has been watched from its beginning. Sometimes the patients are brought to the hospital in a state of furious delirium, with threatening countenance, great agitation, and convulsive movements. In many these symptoms are accompanied by spasms of the muscles of the face, fixing of the jaws, grinding of the teeth, twitchings of the tendons. When the attack terminates unfavourably the delirium is succeeded by a state of insensibility, of stupor, or of coma; the limbs are relaxed, the pulse is small, respiration becomes incomplete, stertorous, the pupils of the eyes immoveable, the extremities cold, and life ceases.

The delirium may be furious or tranquil, but does not resemble that accompanying inflammation within the head; taken alone, it is very like that of delirium tremens.

Of five cases of convulsions and delirium observed by M. Nivet one only was fatal. Of five others collected by MM. Merat and Andral one only recovered. Nevertheless, it is considered certain that these affections are not so often mortal as epilepsy from lead.

Epilepsy, for the most part, arises during a very severe attack of colic. With one class of sufferers, after an uncertain time, the paroxysms return, become more frequent and more lasting, and the patients soon sink. With other epileptics the termination is not quite the same; one attack is followed by some moments of ease, during which the respiration and circulation have scarcely time to recover their ordinary condition when a second fit like the first comes on. Attacks which succeed one another thus rapidly are quickly fatal.

Lastly, after an uncertain number of paroxysms, the patients may die in or immediately after a fit, but more commonly before death they fall into a comatose state.

In the intervals between the fits the sufferer, sometimes recover their consciousness, sometimes they remain in a state of stupor, in other instances they are excited, or delirious, or again exhibit alternations of excitement, of delirium, and of coma. Sometimes there is incomplete palsy of the limbs. When they recover their consciousness completely, the symptoms of colic are observed to return.

This form of epilepsy may last a few days or weeks, but never becomes chronic. Of twenty-one cases, recovery took place only in two.

Dr. Alderson has called attention to the occurrence of paralysis of the nerves of vision, as arising in consequence of the absorption of lead; and this terminates our account of the diseases associated with Colica pictonum.

If it be asked what light post-mortem examination throws upon cases of Colica pictonum or its complications, we believe that, to speak truthfully, we must say none. Dr. Christison gives only this negative information on the subject: "The appearances in the bodies of those who have died of the various forms of lead colic are different, and wholly unconnected with inflammation;" and he quotes M. Tanquerel's conclusion that the pathological phenomena are not caused by anatomical changes cognizable by the senses; and that such appearances as may be found are effects, not causes, of the disease. More or less contraction of the colon is the only phenomenon generally observed.

That lead may be absorbed, is proved by its detection in the brain, the muscles, the liver, the intestines, the blood, and fluid in the ventricles of a child that died during its continued use under the care of a quack.

It is necessary, before entering upon a description of the preventive measures to be adopted in respect of this disease, to indicate the ways in which lead is wont, or has been known, to find admission insidiously into the system.

Now the emanations from fresh paint are often found to act injuriously upon susceptible individuals; but besides these, there are numerous other unsuspected vehicles of the poison. As regards the action of leaden pipes or cisterns upon the waters conveyed or contained in them, it should be known that impregnation with the metal is probable in proportion to the purity of the water. The presence of a very minute quantity either of sulphate of lime or of common salt, as they exist in many spring-waters, is protective in this respect, whereas a total absence of saline ingredients facilitates an action upon the pipes or reservoirs, and the more so if there be at the same time an excess of fixed air or carbonic acid in the water. Hence the use of leaden covers to cisterns or other receptacles for water is always to be avoided, since the vapour which condenses upon them is both free from saline ingredients and abundantly ærated, and readily forms a carbonate of lead, which falls down and is diffused in the mass beneath. For a like reason rain-water collected from leaden roofs or conducted in leaden gutters is unfit for culinary purposes. We cannot here enter at length into the details of this subject; but in addition to the principles already stated, it should be borne in mind that wherever leaden pipes, or pumps, or cisterns are observed to undergo an unusual decay, there is always ground for apprehending that the water conveyed in them must be deleterious for drinking.

Some acids of common occurrence facilitate the solution of lead by the fluids in which they exist. This is particularly the case with acetic acid, or vinegar, and also with malic acid as it is found in apples, currants, and many other fruits. It was the action of this latter acid upon lead entering into the formation of the presses or pipes, or some portion of the apparatus employed in cyder-making, that formerly caused colic to be very prevalent in some counties where this drink was in common use. Milk, it is said, has been poisoned by being kept in leaden troughs; and, upon the whole, it appears that, as a general rule, the preparation or preservation of articles of food and drink in leaden vessels is fraught with danger.

Lead glazings of earthenware dishes employed for making tarts are in some cases in part dissolved by the juices of the fruits that are baked in them. We are told, indeed, that such dishes were at one time purposely used by good housewives with the purpose of saving sugar. The acid of the fruit forming with the litharge of the glaze a sweetish salt of lead, no doubt, suggested this dangerous economy. There is reason, however, to believe that this action only takes place with some glazes in which the lead exists in very large proportion.

The practice of correcting acid and harsh wines by means of litharge and other preparations of lead was at one time very common in France, and there is reason to believe that it is not entirely abandoned even in the present day. It appears that, where the fermentation has passed beyond the proper point, acetic acid is formed in the wine, and this has the property of dissolving, not only the oxide of lead, but also the tartrate formed with the tartaric acid, always present in wine. Dr. Christison thinks that the malic acid sometimes formed in wines at the expense of the bitartrate of potass has the same property, which is common also to another vegetable acid, namely the citric. We must remark that we have followed the authority of Dr. Christison in the above statements, which are at variance with Dr. Kane's description of the malate of lead, which leads to the inference that it is insoluble at ordinary temperatures.

The tendency of the salts of lead to destroy the colour of wines makes it little or not at all available for the correction of red wines; but this property has caused it to be employed for rendering brandy pale.

We cannot, of course, indicate all the adulterations in which lead is employed, and as a consequence of which it may secretly gain admission into the human system. Dr. Christison says of them that their number and variety is endless. It should be known, however, that red-lead has been used for colouring cheese, white-lead for giving weight to butter; and litharge, or some compound of lead, has been found in large proportions in one variety of snuff. The medicinal use of lead is not devoid of danger: colic has been induced both by its internal exhibition, and by its application to denuded surfaces as a wash; it has given rise, too, to its characteristic effects when accidentally mixed with sugar which had been put into a cask that had previously contained white lead. Rum has been found impregnated with it, but the source of this mischief seems not to have been accurately ascertained. Hollands, too, has been poisoned with it.

The above media for the introduction of lead into the system are such as are calculated to spread its injurious influences amongst all classes of society; but the especial sufferers from Colica pictonum are the workers in white-lead manufactories and other artizans—as painters, plumbers, potters, &c.,—who are more or less brought into contact with different preparations of lead in the pursuit of their ordinary callings. It is chiefly among such that the worst forms of colic, the most obstinate palsies, and the most dangerous affections of the nervous system, are found to occur.

A dreadful disease of a similar nature with the colic under investigation, and caused by the destructive fumes of melted lead, is known to be very prevalent among those who are employed in smelting or preparing this metal, and is said to attack even those who live near the furnaces. It passes in many places under the name of the mill-reek.

We do not assign any other exciting cause of this colic than the absorption of lead, because we consider the existence of others as not established upon sufficient evidence.

As regards the predisposing causes, these are said to be chiefly depressing mental influences and exposure to cold; probably, also, any circumstances which have a debilitating influence on the system.

It has been believed that this colic had been observed to recur without fresh exposure to the specific poison producing it. We are not prepared altogether to deny this position; nevertheless the use of what may be called the detective-bath, already mentioned, by Dr. Pereira, has shown in so many instances that persons supposed to have been freed from all particles of lead were still bearing about them enough to infect the system afresh, tends greatly to weaken the evidence in support of the opinion here spoken of.

It is not to be supposed that specific preventive measures can be suggested to obviate all the possible sources of danger which have been indicated above; yet, as regards two of the most important,—namely, the use of water conveyed or kept in lead, and the precautions to be adopted by manufacturers or workmen exposed to be contaminated by it, — some useful directions may be given.

Dr. Christison gives some valuable hints relating to the first of the heads at page 534. of the fourth edition of his Treatise on Poisons. " The general results," he says, " of the preceding inquiries are, that rain or snow water for culinary use should not be collected from leaden roofs, nor preserved, nor conveyed in lead; that the same rule applies to spring-waters of unusual purity, where, for example, the saline impregnation does not exceed a 15,000th of the water; that spring-water which contains a 10,000th or 12,000th of salts may be safely conveyed in lead pipes if the salts in the water be chiefly carbonates and sulphates; that lead pipes cannot be safely used even where the water contains a 4000th of saline matter, if this consist chiefly of muriates; that spring-water, even though it contains a large proportion of salts, should not be kept for a long period in contact with lead; and that cisterns should not be covered with lids of this metal."

The precautions to be exercised in the case of miners, of manufacturers of white lead and its oxides, and of workers in lead generally, are such as partly devolve upon their employers, and partly, also, upon themselves. Of the first kind are all such measures as tend to prevent the production or diffusion of a poisonous dust or powder in the premises where the workmen are employed. This may be effected in the case of white lead, and probably in other instances also, by having all operations for comminution—as rolling and grinding—carried on under water, or at least upon the material in a wet instead of in a dry state. A frequent sprinkling of the apartments with water tends, also, to lay any dust that may unavoidably arise in other cases; and, again, if there be any particular source of noxious dust or vapour, it should, when possible, be covered over, or a draught should be created so as to carry to a chimney and to a distance the particles which may arise from it.

Workshops should, besides, be spacious and well ventilated; and cleanliness, as far as possible, be enforced with regard to the premises themselves, as well as commended to the observance of the workmen.

Personal cleanliness is the great source of protection which these last have to provide for themselves. They should wash their faces and necks and hands frequently, the last always before eating; they should rinse their mouths with water, too, before taking meals, and should neither keep nor eat their victuals in the places where they are exposed to lead. They should bathe periodically, say once a week, and occasionally employ the detective-bath to assure themselves that they are freed from adhering lead. Their working clothes should not be worn at home, and it is best that these should be made of strong linen, rather than of cloth, so as to allow of being washed occasionally. Their heads should be covered with a cap during their work, made of paper, or some material impervious to dust. They should live well, but not intemperately; they may, it is believed, be benefited by indulging a taste for fat, whether in bacon or other meat; and they should be careful to resort to medicine for the relief of any tendency to costiveness. In addition to these means, M. Gendrin has recommended the free use of an acidulated drink, in which sulphuric acid is substituted for that of the lemon. The proportions he suggests are from a drachm to a drachm and a half of acid to three pints of water, and of this mixture two glasses are to be taken daily by each workman. He declares that this treatment, together with the external use of sulphurous and soap-baths, assisted by the flesh-brush, has been successfully employed at the white-lead manufactory at Clichy during two years and a half; so that we think it well entitled to a trial, notwithstanding Dr. Christison's doubts as to its efficacy. The plan has the advantages of being cheap and harmless, if only care be taken that the sulphuric acid is free from arsenic.

In colica pictonum, where there is great irritability of the stomach, with frequent vomiting, we should give a preference to the hydrargyri submurias over most other purgatives, as it may be administered in the form of pills[*], which will be less likely to be rejected than any medicine in a liquid form. According to the severity of the pains, we are to continue the use of opium, either joined with cathartics or given separately; but perhaps the former might be preferable.

These pills may be given as here directed, or instead of this, a single dose only having been taken, we may follow it up by a mixture containing a fluid drachm of dilute sulphuric acid, and the same quantity of laudanum, with an ounce and a half of Epsom salts, dissolved in six ounces of Pimenta water. Of this a sixth part should be given every four hours; and the medicine continued till the bowels have been very freely acted upon. The sulphuric acid is generally grateful to the stomach, and we have some confidence in the action of the acidulated sulphate of magnesia as an antidote to the poison; on which ground it is probably quite as efficacious as alum, a remedy many years ago vaunted for the treatment of colic, and recently revived.

A warm bath may be advantageously employed for the double purpose of cleansing the skin and of relaxing spasm, as soon as the state of the patient will permit.

If no motion be procured by these means in the course of twenty-four hours, a stronger aperient should be given, and croton oil is one of the best. It may be administered in the form of a pill, consisting of two drops of the oil, with one grain of opium, and two of calomel, and enough of extract of camomile to give it consistence. And after it has been taken, the acid mixture should be continued as before. If the form of draught be thought preferable, it may be given as proposed by Dr. Alderson, two drops of croton oil being mixed with ten grains of magnesia, and a drachm of mucilage, and then diffused in an ounce of cinnamon water, and this draught may be given only once, and followed, as in the former case, by the mixture; or if the colic be very obstinate, and the sufferings of the patient extreme, it may be repeated either alone or with the addition of ten or fifteen drops of laudanum every three or four hours till the bowels have been acted upon. It is to be remembered that in these cases opium, by relaxing spasm, promotes rather than retards the action of purgatives. If there be no tenesmus, and no spasm of the sphincter to prevent the use of a clyster, we may have recourse to an injection instead of, or in conjunction with, these powerful purgatives. The form given below * may then be employed.

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[*] ℞ Hydrargyri Submuriat. gr. v.
Extract. Colocynth. C. gr. vj.
Opii, gr. j.
Ol. Carui, ♏iij.
Contunde simul, et fiant pilulæ iij. quartâ quâque horâ sumendæ, donec alvus probè respondeat.

[*] Take Submuriate of Mercury, five grains.
Extract of Colocynth, six grains.
Opium, one grain.
Oil of Caraway, five drops.
Mix them well; then divide them into three pills, repeating the dose every four hours, until the bowels act freely.

Two obstinate cases of colica pictonum, arising from exposures to cold, very lately came under my care, which resisted fomentations, the warm bath, anodyne and tobacco clysters, the internal use of opium and cathartics, and which at last were readily and quickly removed by placing the patients in a large tub, and throwing a pail of cold water over the abdomen and thighs. The operation was not required a second time, for copious evacuations soon took place in both cases, after which the spasmodic affection was prevented from returning by small doses of opium, repeated from time to time.

We have found the use of the warm bath very beneficial in relieving those pains resembling rheumatism, which sometimes alternate with the attacks of colic, and at times remain when this has been removed. Dr. Alderson states that he has found cases of paralysis without colic to yield for the most part to the compound infusion of roses, with salts and laudanum. Our own experience makes us less sanguine of success from this simple treatment, although we think it deserving of a trial.

In the treatment of that species of palsy which is produced by the poison of lead, and which is apt to ensue after severe attacks of colica pictonum when excited by this mineral, Dr. Pemberton is of opinion, that, besides the remedies appropriate to the removal of the original disease, some assistance of a mechanical nature might be applied likewise for the purpose of relieving the topical paralysis, by placing the muscles in such a state as that they might be again enabled to resume their lost action; and for this purpose he recommends the use of an ingenious mechanical contrivance, which consists in keeping the hand extended, and all the muscles of the arm at rest, and free from tension, by means of a splint lined with a pad, and extending from the point of the elbow to the tip of the middle finger. This is to be fixed by means of a roller wound around it and the limb throughout its whole length, and the arm should then be supported in a sling.

Dr. Alderson has applied the same principle of withdrawing the stimulus of light from the eyes, when the retina has lost its power through the influence of lead. A bandage was applied over the eyes, so as to exclude the light, in the instances of two persons thus affected, and in both cases this plan of treatment was successful in little more than a month. The bandage was worn day and night.

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* ℞ Extract. Colocynth. ʒss.
Infus. Sennæ, f. ℥x.
Sodæ Sulphat. ℥ss.
Ol. Ricini, f. ℥j. M.
Ft. enema.

* Dissolve Extract of Colocynth, half a drachm, in
Infusion of Senna, ten ounces; and add
Sulphate of Soda, half an oz.
Castor Oil, one ounce.
Mix them for a cylster.

In the paralysis from lead, benefit is often derived from stimulating liniments rubbed upon the muscles of the fore-arm, for which purpose the linimentum ammoniæ of the Pharmacopœia answers very well; and it is in this variety of palsy that the preparations of nux vomica, and the employment of galvanism are resorted to with the greatest prospect of advantage. The extract of nux vomica is the preparation that we have been in the habit of using. The commencing dose of this is, for an adult, half a grain three times a-day, and this dose may be increased every second or third day by a quarter of a grain till tremors or catchings of the limbs are produced, upon the first appearance of which the medicine must be immediately discontinued. If galvanism be employed, a weak current should be transmitted through the affected limbs once a day for a considerable period. There are, we fear, some cases which will defy all our resources.

It should be mentioned that castor oil is a useful aperient, which is found to give much relief to the patient either in mild cases of its actual occurrence, or where there are threatenings of its supervention or return. The following * is a good form for its exhibition, and may be used with or without the tincture of opium, according as pain is present or absent.

When our endeavours to put a stop to the vomiting and spasms, as likewise to procure stools, are crowned with success, we are then carefully to guard against a return of the disease, by keeping the body regular and open with some aperient medicine, giving small doses of opium from time to time, and by cautioning the patient against exposing himself to cold or any other occasional cause. The tone of the primæ viæ is afterwards to be restored by a use of tonics and stomachic bitters, as recommended for the cure of dyspepsia.

Should a tingling sensation be felt down the spine, together with a feebleness and numbness in the extremities, the parts affected may be rubbed with some kind of stimulating application, as advised under the head of Palsy; besides which, the patient should frequently make use of warm bathing, always giving a preference to natural baths where they can be resorted to. In addition to these remedies, a long-continued use of cinchona bark, bitters, chalybeates, and friction with a flesh-brush, assisted by electricity, may be employed. Flannel should be worn next to the skin.

The paralysis, or loss of power in particular limbs, which is one of the serious consequences resulting from the poison of lead, is

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* ℞ Ol. Ricini, f. ℥ss.
Mucilag. Gum. Acaciæ, q. s. Misceantur in mortario, et adde.

Aq. Menth. Pip. f. ℥j.
Tinct. Opii, ♏xv. M.
Ft. haustus, pro re natâ sumendus.

* Take Castor Oil, half an ounce.
Mucilage of Gum Acacia, a sufficiency; mix them in a mortar; then add gradually.
Peppermint Water, one ounce.
Tincture of Opium, fifteen minims.
Mix them, and let this draught be taken occasionally.

found to be peculiarly relieved by a use of the Bath waters when applied externally, either generally or upon the part affected.

The mode in which these waters are prescribed in this complaint, is by bathing and pumping; the former three times in the week; the latter on the diseased limbs and spine to the amount of four or five hundred strokes every other day. When there is considerable debility and want of due tone in the stomach, the waters may be administered internally with very great advantage.* The waters also of Barèges and Aix-la-Chapelle are said to be highly useful in paralysis arising from the poison of lead.

VOMITING OCCASIONED BY SEA SICKNESS.

Although various means of relief have obtained a degree of credit in this distressing and severe affection of the stomach, still the greatest relief is usually to be obtained by remaining perfectly quiet and motionless, and by exposing the body to the fresh air on deck, instead of retiring to the cabin or between the decks. Spirits diluted with water, or taking a little wine, will, however, frequently succeed in checking the vomiting and nausea. The same effect has been known to arise from eating two or three fresh apples. It also appears that any very strong impression made on the mind, as exerting a powerful influence on the brain, is at once capable of arresting the progress of this complaint,—such, for instance, as an alarm of fire on board, the danger of shipwreck, or any other great risk to which the vessel may be suddenly exposed.

MILD CHOLERA MORBUS, OR VOMITING AND PURGING.

Frequent and violent discharges of bilious matter, both upwards and downwards, with painful gripings, constitute the disease called cholera morbus.

In warm climates it is met with at all seasons of the year, and its occurrences are very frequent, and rage epidemically; but in England and other cold climates it is apt to be most prevalent in the autumn, when there is excessive heat, or there are sudden transitions from heat to cold; and the violence of the disease has usually been observed to be greater in proportion to the heat. These circumstances naturally induce us to presume that cholera morbus is the effect of a warm atmosphere producing some change in the state of the bile; which change may consist either in the matter of the bile being rendered more acrid, or its being secreted in a preternatural quantity. In some instances the disease has been observed to proceed from obstructed perspiration, and likewise from food which has passed readily into the acetous fermentation, from unripe fruit and acrid ingesta; but these causes probably would not give rise to it without the predisposition acquired by preceding great heat, succeeded by sudden transitions to cold, particularly in the evenings.

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* See Treatise on the Bath Waters, by M. J. H. Sprey.

That the functions of the liver are greatly deranged in cholera morbus is very certain; but that the symptoms are caused wholly by the action of bile upon the mucous surfaces, is now, I believe, acknowledged to be an erroneous opinion. When it is considered that there is a cold stage antecedent to that of action and excitement, and that the vomiting and purging exist for some hours before the bile appears in the matter ejected, it must be evident that there is a highly excited state of the mucous surfaces, wholly independent of the biliary secretion. The causes of cholera morbus, as well as the symptoms and the appearances after death, evince clearly that the disordered action affects the liver and mucous surfaces of the stomach and intestines.

The disease usually makes its attack suddenly, and commences with nausea, soreness, pain, distension, and flatulency in the stomach, and acute griping pains in the bowels, succeeded after a time by a severe and frequent vomiting and purging of bilious matter, thirst, a cold skin, a hurried respiration, and a frequent, but weak and fluttering pulse.

When the disease is not violent, these symptoms, after continuing for a day or two, cease gradually, leaving the patient in a debilitated and exhausted state; but where the disease proceeds with much violence, there arises great depression of strength, with cold clammy sweats, considerable anxiety, a hurried and short respiration, cramps in the legs, coldness of the extremities, and hiccups, with a sinking and irregularity of the pulse, which quickly terminate in death; an event that not unfrequently happens within the space of twenty-four hours.

Cholera morbus is to be distinguished from diarrhœa and dysentery by the matter which is discharged by stool being purely of a bilious nature unmixed with blood or mucus, and with scarcely any admixture of fæces.

Our opinion must ever be unfavourable, when the evacuations upwards and downwards are accompanied by great prostration of strength, much distension of the abdomen, intermitting pulse, cold clammy sweats, a short hurried respiration, constant hiccup, spasms of the extremities, or convulsions: but a gradual diminution of the symptoms, especially of the vomiting, succeeded by sleep, or a gentle moisture of the skin, may be regarded in a favourable light.

The appearances generally to be observed on dissection, where cholera terminates fatally, are, an accumulation of bile in the stomach and intestines, particularly in the duodenum, relaxation and distension of the biliary ducts, and a removal of many of the viscera from their proper places, occasioned probably by the violence of straining in vomiting.

From the very irritable state of the stomach on the first attack of the disease, every thing is thrown up again almost as soon as swallowed. To abate this irritation, and evacuate the redundant or acrid bile, it will be necessary, during this state of the disorder, to make the patient drink plentifully of diluent liquors,—such as barley-water, linseed tea, rice-gruel, animal broths, beef-tea, or toast and water; and to assist the effect of their operation, tepid mucilaginous clysters of the same nature may likewise be injected.

In addition to these means, flannel cloths wrung out in a warm decoction of poppy-heads, slightly bruised, with an addition of about one-fourth of spiritus camphoræ, may be applied to the region of the stomach, and renewed as often as they become cold. Warmth should likewise be applied to the extremities by means of bottles filled with hot water or heated tiles.

As soon as the stomach is sufficiently cleansed by the diluents just recommended, we should endeavour to allay or put a stop to the irritation, by administering opium in sufficiently large doses, but, at the same time, in as small a bulk as possible. It may be given in the quantity of a grain or a grain and a half with four or five grains of calomel, in the form of a pill, and be repeated every two hours, as long as the urgency of the case may require: if the pill is rejected, about thirty minims of tinctura opii may be added to a small saline draught, swallowed in the act of effervescence; and this may be repeated as frequently as the former. In some instances, where the spasms have been so violent as quickly to induce an alarming state of debility, I have known the quantity of opium to have been increased to eight or ten grains in each dose.

After the administration of opium in the manner advised, it will be proper to immerse the patient as soon as possible in a warm bath, as this will be a likely means of checking the inordinate secretion of bile by restoring the circulation to the surface of the body, and of course relieving the orgasm of the chylopoetic viscera. Stone jars filled with hot water, or bags containing warm sand applied to the feet, and wrapping the patient in hot blankets, will be good substitutes when a warm bath cannot be obtained.

In the advanced stage of this disease, where the pulse is weak and the extremities are cold, opiates, joined with aromatics—as in the confectio opii, and musk in large doses— may be employed with advantage. Warm wine negus may be drank freely, and it had better be will spiced.

Opium, when given by the mouth, even in the smallest possible bulk, is frequently rejected by vomiting in cholera morbus; but if given in an enema, will often in a very short space of time completely remove all the urgent symptoms, and transfer the patient from a state of torture to one of ease. Clysters of this nature, containing about a drachm of tinctura opii in each, ought therefore to be injected from time to time as long as the irritation at the stomach continues.

Two writers on the diseases of India[*] mention, that a very severe and fatal spasmodic cholera, proceeding from acrid bile in the primæ viæ, is a very prevalent disease on the coast of Malabar, where it is known by the name of *mort de chien*, from its fatality. In this species of the disease, opium in the form of injection has succeeded when all medicines by the mouth have been ineffectual in allaying the orgasm of the stomach and intestines.

A cataplasm of opium and camphor applied to the region of the stomach will sometimes arrest its retrograde motions. In several cases where there prevailed great pain and irritation at the stomach, and where the patient could retain nothing on it, I have experienced the best effects from the external application of opium to the epigastric region, in the form of an embrocation.[†]

The application of a cataplasm composed of the powder of mustard with a proportion of linseed meal, or a blister to the stomach, will sometimes put a stop to the vomiting, by stimulating the skin, and, by sympathy, affecting the stomach. In very severe cases of cholera in this, as well as in warm climates, it might probably be advisable to resort to the application of linen rags dipped in very hot water, so as to produce vesication; removing them as soon as this effect is produced.

I have been informed by a medical friend who practised many years in the West Indies, where cholera is of frequent occurrence, as has before been observed, that he found large doses of acidum sulphuricum dilutum to abate the irritation of the stomach more readily than even opium.

Some cases of this disease which had resisted the power of opium, have indeed been successfully treated with diluted nitric acid in small doses, combined with an infusion of calumba or cascarilla. Its valuable effect in allaying the irritation at the stomach I have myself witnessed of late in two or three instances.

As soon as a sedative effect is produced on the stomach and intestines, and the violence of the attack has somewhat subsided, a mild laxative will assist in carrying off any diseased secretions. The aperient draught prescribed below[‡] may be taken for this

[*] See Mr. Curtis's Treatise on Indian Diseases; Essay on the Influence of Tropical Climates, by J. Johnson, M.D.

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† ℞ Spirit. Camphoræ, f. ℥ss. Tinct. Opii, f. ℥j. Liquor. Ammon. ℥ss. Ft. embrocatio, supra ventriculi regionem sæpè infricanda.	† Take Camphorated Spirit, half an oz. Tincture of Opium, one ounce. Solution of Ammonia, half an oz. Mix them, and rub a little of the embrocation frequently over the region of the stomach.
‡ ℞ Magnes. Sulphat. ʒij. Infus. Rosæ Compos. f. ʒx. Syrup. Croci, f. ʒj. M. Ft. haustus, quartis horis repetendus, si erit necessitas.	‡ Take Sulphate of Magnesia, two drachms. Compound Infusion of Roses, ten drachms. Syrup of Saffron, one drachm. Mix them, and let the draught be repeated every four hours, as long as may be necessary.

purpose, or we may give three grains of calomel conjoined with three or four of rhubarb.

Although we may have been so fortunate as to procure a remission of the symptoms, still, as the spasms have a great tendency in this disease to recur after the operation of the opium is over, it will by all means be advisable to continue its use for several days, in such a manner as to keep up a constant effect.

In ordinary cases, where the evacuations are moderate, astringents would be improper, as they might aggravate the complaint by retaining the vitiated bile in the intestines, which ought to be discharged as long as the morbid secretion from the liver continues.

As the debility induced by the disease greatly favours the disposition to spasmodic affections, it may be proper at the same time that we use opiates to employ tonics, as wine, cinchona, sulphate of quinine, and chalybeates (see Dyspepsia), in order to restore the tone of the stomach; taking care at the same time to obviate costiveness by some gentle laxative, — such as rhubarb.

As strengtheners of the stomach and intestines, infusions of calumba root and cascarilla bark will be found useful medicines, and may therefore be given two or three times a day.

On recovery, the patient should pay particular attention to his diet, carefully abstaining from all things which might promote a return of the disease, and using only such as are light and nutritive, and which do not readily become acescent. He is likewise to pay a minute attention at the same time to the functions of the skin by wearing flannel or other warm clothing, while the night air and sudden alterations of temperature are to be cautiously guarded against.

There are some people who are subject to periodical attacks of cholera, returning by intervals of a few weeks, producing for two or three days sickness and vomiting, increased heat of the skin and quickness of the pulse, white tongue, and thirst. Sometimes, however, the bowels are torpid. Heaviness of the eyes and a great disposition to drowsiness are commonly the precursors to the attack; and if a dose of calomel joined with some gentle purga-

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* ℞ Infus. Cascarillæ, f. ℥jss.
Tinct. Calumb. f. ʒiij.
—— Card. C. f. ʒj. M.
Ft. haustus, ter die sumendus.

Vel,

℞ Pulv. Calumb. gr. x.
—— Zingib.
Ferri Subcarbonat. āā gr. v.
Syrup. Rosæ, q. s. M.
Ft. bolus, bis quotidie capiendus.

* Take Infusion of Cascarilla, one ounce and a half.
Tincture of Calumba, three drachms.
Compound Tincture of Cardamoms, one drachm.
Mix them, and let this draught be taken three times a-day.

Or,

Take Powder of Calumba, ten grains.
—— Ginger,
Subcarbonate of Iron, of each five grains.
Syrup of Roses, a sufficiency to form a bolus, which is to be taken twice every day.

tive be then given, it will either considerably lessen its violence, or altogether prevent it.

Exercise, particularly on horseback, tonics, and the Bath or Cheltenham waters, are well calculated to afford relief and prevent recurrences of the complaint in all such cases.

A very severe species of cholera morbus is a prevalent disease on the coast of Malabar; but towards the close of the year 1817 and the year 1818, this disorder prevailed epidemically throughout Hindostan and the peninsula of India, and several thousands of the natives, both Mussulmans and Hindoos, as also Europeans, fell a sacrifice to it. Almost every corps in the army was attacked with it. It raged with dreadful fatality in Calcutta; and, from January 1818 to the succeeding May, the deaths in that city seldom fell short of two hundred each week.

The practitioners in India admit that no marked peculiarity in the weather was observed previous to the appearance of this disease in Bengal; and it does not seem to have been at all affected in its severity or progress by the circumstances of season, temperature, or moisture. It was observed to prevail with equal violence when the thermometer was at 40° or 50° as when it stood at 90° or 100°, during the prevalence of incessant rains for months, and when the face of the earth was scorched up by long-continued heat and drought.

It appears, from the reports given in by the practitioners who were commissioned on the occasion to scrutinise into the nature of the disease and its treatment, that the principal curative means resorted to were bleeding, calomel, and opium. By most, bleeding at the onset was considered as indispensable. It was found, that whilst the blood was flowing from the arm the most distressing symptoms were frequently relieved; the vomiting generally ceased; the burning sensation at the stomach abated, and the pains and spasms in the abdomen relaxed in severity; and it was always perceived, that the pulse invariably rose while the blood flowed from the arm. Bleeding was, however, found more necessary for Europeans than for the natives.

Calomel was given in doses of fifteen grains, or a scruple combined with two grains of solid opium, or followed by sixty or one hundred and twenty drops of tinctura opii. The effect in general was speedy, and its sedative power in this large dose was admitted by all. If the first dose was immediately rejected it was again repeated, and continued without any regard to quantity, according to the urgency of the symptoms. In conjunction with these remedies, cordials and antispasmodics — such as peppermint, æther, the spiritus ammoniæ aromaticus, and other diffusible stimuli—were found the most useful adjuncts; but the whole hopes of success rested on bleeding at the onset of the disease, calomel, and opium.

When these remedies were employed early and conjointly, it is reported that the success was almost in every instance nearly certain. The patient generally fell asleep, and awoke free from the most painful symptoms, or was greatly relieved; and when bile appeared in the alvine evacuations instead of the watery or clayey matter which was the usual attendant, it was a sure sign that the remedies were effective, and amendment taking place. After these effects were obtained, it was necessary to give a mild laxative, and the carbonate of magnesia was generally found to answer the purpose.

From the report given in, it appears that the disease was not considered by the majority of practitioners in India as contagious, although judged by some to have such an influence. The proximate or exciting cause of the epidemic was obscure. Rapid atmospherical vicissitudes, in regard to temperature or moisture; exposure of the body to currents of cold air, particularly the chill of the evening, after being heated by violent exercise of any kind, inducing exhaustion or debility; low marshy situations, terrestrial exhalations of some kind or another, either affecting the purity of the air, or its electrical state; insufficient clothing; flatulent and indigestible food, especially crude and watery vegetables, which compose a large proportion of the diet of the natives, and particularly that gradual undermining of the constitution which arises in a condensed, dirty, and ill-fed mass of population,—are all, unquestionably, powerful predisposing causes, and, although not *absolutely* necessary to the production of the disease, might, when present, offer a more unlimited range to the operation of the original cause, whatever it may have been.

The best work on the epidemic cholera of the East appears to be that of Mr. James Annesley, of the Madras Medical Establishment; and those who wish to be fully acquainted with the subject will do well to peruse it.

The peculiar appearance of the blood in every case of dissection which he performed, uniformly shewed the venæ cavæ, the mesenteric veins, the veins in the vicinity of the heart, the venæ portæ, the iliac and subclavian veins, and the sinuses of the brain, loaded by a thick, viscid, and black blood. The right cavities of the heart were generally distended with the same description of blood, and when any was found in the left cavities of this organ, it was similar in appearance to that lodged in the right. The lungs were always completely gorged with blood of a pitchy or black appearance, and all the internal viscera presented a greater or less degree of congestion of blood, possessing nearly the same characters. The blood-vessels at the external surface of the body, and in the extremities, were generally contracted and empty, or nearly so.

Blood, when drawn from a patient even at an early period of the disease, exhibited the like character, being black and viscid.

CHOLERA SPASMODICA.

Both Dr. Chambers and Dr. R. Williams have devoted themselves to the investigation of the question whether the Indian or spasmodic cholera, which burst out at Jessore, in Bengal, in August 1817, be in truth, as by many it has been supposed to be, an entirely new disease. The result of the inquiry is in both instances opposed to this belief. In a lecture on the disease delivered in 1832, but first published in the Medical Gazette of 23rd February, 1849, the former of these physicians having stated two propositions, as under discussion, expresses himself thus: — "With respect to the first of these — viz. that the disease was unknown in Europe until the year 1830 — I think the descriptions which I have quoted from Hippocrates, Celsus, Aretæus, and Aurelian; from Soranus, Trallian, and Ægineta; from Sydenham, from Jullman, from Morton, and I may add from Armstrong and Hennen, must be sufficient to convince all those whose opinions have not, on other grounds, been too firmly rooted, to be assailed by any arguments. The authorities I have mentioned, particularly the descriptions of Morton, are, I confess, conclusive on the subject to my own mind; and I doubt not that if I had had more time and leisure for the search than I have been able to command since I commenced the investigation of the subject, I could have added very largely to the authorities which bear on this point.

"The next proposition," he continues, "from which I feel bound to dissent, is that the disease was new altogether, or, if not entirely new, that it was not known as an epidemic in any country, even in India, until the month of August 1817." The Madras Reports are then referred to in proof of the mention of a similar disease by Bontius, in 1629, of the occurrence of cholera morbus in the Mauritius in 1775, of its raging at Ganjam in April, 1781, at Trincomalee in 1782, at Arcot in November, 1787. Dr. Paisley is cited as writing at Madras in 1774, and speaking of the disease as being often epidemic there from 1769 to 1774; while Sonnerat, it is said, mentions it as an epidemic disorder that reigned along the Coromandel coast from 1774 to 1781; a disorder which destroyed 60,000 people in the neighbourhood of Pondicherry. Mr. Jamieson is quoted for the fact of the cholera having broken out among an immense concourse of pilgrims at Hurdwar in 1783, and cut off more than 20,000 victims in eight days. It is stated, also, that of Colonel Pearse's division of 5000 men marching through the northern circars in 1781, 700 were carried off in a few days.

From these, and a few other facts, is derived the conclusion which we give in Dr. Chambers's own words: — "I think, then, it cannot be denied that cholera spasmodica was as well known before 1817 in India, except from the want of proper and regular returns on the subject, as it has ever been at a subsequent period:

at least, that it was as often epidemic and as extensively fatal at intervals then as now."

Dr. Craigie, too, in his Practice of Physic, says of cholera that it is not a new disease. Dr. R. Williams says of this disease, that it certainly was not known on the continents of Europe and America prior to the epoch of 1817, but that there seems good reason to believe that cholera indica must have occasionally occurred sporadically, and also perhaps endemically, in India, as far back as the annals of that country extend. Mr. Curtis's description of the cramp, or mort de chien, which prevailed in Ceylon and Madras in 1782–3, leaves, he thinks, no doubt that the disease spoken of was identical with that now known as Asiatic cholera, and proves its existence at that date; while this fact renders it probable that many sudden and severe endemic attacks, both of the troops and of the inhabitants of India, must have been cholera. Nevertheless, Dr. Copland has come to the opposite conclusion, that the disease was entirely unknown prior to the year 1817; and this appears the most prevalent opinion.

This malignant disease having extended from Asia into Russia, Poland, Austria, Prussia, and Hamburgh, at length reached Great Britain, and first became apparent at Sunderland, in the county of Durham, to which place it is supposed to have been conveyed by some sailors on board of a vessel from the Port of Riga. From Sunderland its contagion was communicated to Newcastle, and districts adjoining thereto. Thence it extended to Haddington, Musselburgh, Edinburgh, and other places in Scotland; and it at length reached the metropolis both of England and Ireland, where many thousands have fallen victims to its malignancy notwithstanding the very judicious means which were recommended, and, indeed, enforced by government, for lessening its spread and fatality. The disease in a short time extended to several of the provincial cities and towns, in many of which preparations were, however, promptly made for guarding against the consequences likely to ensue from its malignancy.

No length of time transpired before Paris was visited by this malignant disease, as was also New York, in North America, in both of which places it proved very fatal indeed.

Dr. T. W. Merriman, in his paper on Asiatic cholera, published in the 27th volume of the Medico Chirurgical Transactions, furnishes some interesting particulars as to the prevalence and fatality of the disorder in 1831-2. According to this writer, in the whole population of Great Britain, exclusive of Ireland, amounting to nearly five millions and a quarter, 82,528 were the number attacked, of whom 31,376 died, and 51,152 recovered. The ratio of deaths to recoveries exhibited very considerable variations in different districts or localities. Thus in Scotland, the former were 10,650, the latter 10,549 in a population of 937,146. In London and its vicinity, they were respectively 5275 and 5745 in a population of 1,424,896; while in the rest of England the deaths were 14,807, and the recoveries 33,790 in a population of 2,753,958. It will be seen from the above details that in places where the number of attacks was greatest in proportion to the population, the number of deaths was also greatest in proportion to that of the attacks: facts which seem to prove the powerful operation of endemic influences as affecting the prevalence and ravages of the disease.

The question of the contagious or non-contagious nature of cholera is one of great practical importance upon which nevertheless medical opinion is as yet much divided. While some eminent physicians—as, more especially, Dr. Copland—strongly maintain the affirmative position, the majority, it appears to us, lean to an opposite conclusion. It is neither convenient nor practicable to discuss the facts and arguments, or to adduce the authorities that might be quoted on either side: we shall, therefore, content ourselves with republishing the clause of the Report of the Cholera Committee of the Royal College of Physicians, dated 28th October, 1848, on this subject, which, though it evades the decision of the point at issue, well expresses the prevalent opinion, as far at least as practical results are concerned.

"Cholera appears to have been very rarely communicated by personal intercourse; and all attempts to stop its progress by cordons or quarantine have failed. From these circumstances, the committee, without expressing any positive opinion with respect to its contagious or non-contagious nature, agree in drawing this practical conclusion: that in a district where cholera prevails no appreciable increase of danger is incurred by ministering to persons affected with it, and no safety afforded to the community by the isolation of the sick." The infectious nature of cholera has recently been put to a severe test, the result of which seems almost decisive of the question. Thus, in the Medical Times of 10th March, 1849, Dr. Peacock is reported to have said that 155 children from Mr. Drouet's establishment at Tooting, were received into the Free Hospital, of whom 84 were affected with the epidemic, 30 were attacked with severe vomiting and purging, and nine with symptoms of decided cholera. The wards were very crowded, and eleven attendants on the children were attacked; while the other nurses and patients escaped. Farther, one man was taken to the Union and died of cholera, and a number of others in the Union were subsequently taken ill, though none had suffered previously.

The persons who have been observed to be most liable to attacks of spasmodic cholera (which is supposed to be of the exact nature with the Asiatic by those who have witnessed the coming on and progress of the disease in India as well as in Great Britain) are the aged and infirm; those who labour under debility from some previous complaint; those of intemperate habits, and who have indulged in a use of intoxicating liquors, particularly spirituous ones; the poor who are ill-fed, scantily clothed, and miserably lodged in damp cold dwellings, or in very confined alleys or courts where there is a dense population, neglectful of due cleanliness and a free ventilation, and among whom the surrounding atmosphere has become very impure and vitiated.

Spasmodic cholera has been supposed by those physicians who have had much experience in the disease, to consist of three stages viz. that where diarrhœa exists, or precedes the attack; that where the features become sharp and contracted, the look expresses terror and wildness, there is giddiness of the head, rigors and chilliness, sickness at the stomach followed by vomiting, griping pains in the bowels with frequent purging, the appearance of what is discharged both by vomiting and stool being very similar to rice-water; the pulse is small and low, becoming after a few hours intermitting; the eyes sink; there is a great depression of the living power; the skin and soft parts are wrinkled and shrivelled; the nails of the fingers and toes put on a blueish or pearly appearance; the lips, face, neck, hands, and feet, and soon afterwards the thighs, arms, and whole surface of the body, assume a leaden, blue, purple, or brown tint, according to the complexion of the individual, and varying in shade with the intensity of the attack; and severe spasms come on, beginning at the tops of the fingers and toes, but rapidly extending to the trunk of the body and limbs.

At length the skin becomes deadly cold and often damp, the tongue is flabby and chilled like a piece of dead flesh, being sometimes moist and at others loaded with fur; the respiration is quick, irregular, and imperfectly performed, the patient seems to struggle for breath, and often places his hand over his heart, as being apparently to him the chief seat of the disease. In general the secretion of urine is wholly suspended; the vomiting and purging continue, however, with great violence; and a state of syncope puts a period to the sufferings of the patient.

When the disease is not of a violent nature, and few of the distressing symptoms above enumerated present themselves, consecutive or reactive fever (being the third stage of the disease) ensues after a time, this being denoted by the pulse becoming fuller, stronger, and more regular, respiration being performed with greater ease, the skin assuming more of its natural appearance, the body becoming warmer, and the spasms abating greatly in their violence. In some cases, a degree of delirium arises, or there are determinations to the lungs, liver, or other organs.

In severe cases of the disease, death has not unfrequently ensued within twelve hours from the commencement of the attack; or even much more speedily.

Diarrhœa is often spoken of as a premonitory symptom rather than as constituting a stage of the disease itself. Dr. Baly, speaking at the Medico Chirurgical Society (as reported in the Medical Times 10th March, 1849), ranges the examples of diarrhœa in three classes. In the one there are one or two evacuations before collapse. In the second there is serous diarrhœa, rice-water, evacuations, and occasional vomiting. In both these forms he considers the diarrhœa a part of the disease, and finds it impossible to stop it by ordinary means.

In the third variety the evacuations at first have not the character of rice-water, and there is no vomiting, or cramp. This goes on for several days, and in the early stage may be checked. The choleraic diarrhœa subsequently ensues. This form he considers not as part of the disease, but as predisposing to it; but he adds that cases of this class are not very frequent; and that in the more frequent cases the ordinary means fail to cure.

The attack of cholera has been observed often to commence at night. If we examine the symptoms in detail we find that vomiting and purging, though almost universally present, are one or other occasionally absent. The purging, however, is more constant than the vomiting, and in the majority of cases is the first in order of occurrence. Though spasm is generally present, yet no symptom is more often wanting. It is more frequent in the robust and strong than in the feeble and sickly. In the most dangerous form it is generally wanting or present only in a slight degree. Intense thirst and burning at the epigastrium are very prominent symptoms in some instances; while in others they are altogether wanting. The pulse has been imperceptible at the wrist, sometimes from the commencement of the attack, and not unfrequently at the end of three, four, or more hours, and often continues lost throughout the cold stage. The secretion of urine is commonly suspended in the stage of asphyxia; but in some cases in which it has continued it has always been small in quantity and limpid, and these cases are not less dangerous than others. The restoration of the secretion is, however, always a most favourable omen. The appearance of blood in the stools which has been observed in the last epidemic is a very fatal symptom.

The temperature of the surface of the body, in general, undergoes a more marked reduction than in any other disease, and this is supposed to be owing in part at least to the non-arterialization of the blood, an inference supported by the fact, that the air expired is deficient in the usual proportion of carbonic acid. A state of restlessness and jactitation is common, but the functions of the brain are seldom disturbed.

If the patient, writes Dr. R. Williams, from whom we have freely borrowed in the above details, should happily survive the cold stage, the disease may terminate by a rapid recovery, or else may pass into the second or febrile stage. The former is the usual course in India, the latter in Europe. The first symptoms of returning health are the patient falling into a sleep of unusual soundness during which the respiration becomes light and easy, the pulse freer, while a gentle warm perspiration bedews the body. After this balmy sleep the patient awakes refreshed, and often recovers rapidly. In other cases, however, a slight reaction takes place followed by rapid convalescence.

In other cases, again; the reaction is more considerable, and the patient in a few hours after the subsidence of the cold stage labours under a severe form of fever in no degree dissimilar to, and not less fatal than, typhus. For the first few hours the tongue is white, but it quickly becomes brown and dry, and a black sordes encrusts the teeth and lips. The eye now becomes deeply injected and red, the cheek pale or flushed, the temperature of the body a little above or below the natural standard, and the patient, either delirious or comatose, lies in a state resembling the last stage of the severest continued fever of this country. This stage usually lasts from four to eight days when the symptoms either gradually yield, or death ensues.

We extract from some statistical tables of the cases at the Cholera Hospital of St. Giles's in the Fields in 1832, by the late Dr. Pinkard, as read before the Medico-Chirurgical Society in February, 1849, some general conclusions indicating the relative frequency of the several terminations here spoken of.

The whole number of cases included in the table were 505.

Of 237 admitted in the state of impending collapse, 34 died (21 in collapse, 7 in reaction, and 6 in fever), and 203 recovered (175 without fever, 28 with fever.)

Of 268 admitted in a state of actual collapse, 219 died (195 in collapse, 15 in reaction, and 9 in fever), while only 49 recovered (27 without fever and 22 with fever.)

Of 12 fatal cases in the Dreadnought in 1837, 6 died in collapse, 3 in reaction, and 3 in fever; of the 8 recoveries four were rapid, and 4 more or less retarded, but without fever.

The revelations of the dead house afford little explanation of the fearful power of this deadly disease. "It is evident," says Dr. Hodgkin, in his lectures on the mucous membranes, "not merely from the inspection of those cases which have been quickly fatal, but also from the occasional rapid recovery of those individuals who have survived the attacks of the disease in its severest form, that the lesion in any particular part has neither been profound nor irreparable. The urgent and rapidly fatal symptoms appear to be occasioned by the extent of the derangement which there is reason to believe affects the whole of the small intestines, and, as a consequence, the larger also."

In the bodies of those who die in the stage of collapse, the external appearances are the same, or nearly the same, as had existed during life: there is the same lividity, and shrunken or shrivelled condition in parts; there is, besides, the usual cadaveric rigidity.

The peritoneal coat of the stomach and small intestines is spoken of by Dr. G. Bode and Mr. Bush as being viscid on its surface, and having a rosy hue in the rapidly fatal cases. The mucous membrane of the stomach in colour and consistence differs very slightly, if at all, from its natural condition; but uncommonly it is more or less reddened, and frequently mammillated. The stomach and intestines, especially the smaller ones, are more or less filled with fluid like that of the evacuations, and a coating of tenacious mucus is found on the internal membrane. No trace of bile or feculent matter is met with in any part of the alimentary canal. The solitary glands, as well as those of Brenner and Peyer, especially the last, are said to be for the most part remarkably developed, and sometimes dotted on their free surfaces, but never ulcerated. The mucous follicles of the large intestine are also affected in the same way, and appear as flattened prominences beneath the mucous membrane with central black spots, more numerous near the cæcum than lower down. The cæcum and ascending colon are often filled, like the small intestines, while farther on, the colon is empty and contracted. The mesenteric glands are generally enlarged, sometimes purplish. The liver, sometimes described as natural, is often full of dark coloured blood, and the gall-bladder distended with unhealthy bile. The spleen has often been found smaller than usual. The bladder is empty and contracted.

In the chest the lungs are found collapsed, condensed, sometimes remarkably shrunk, and always loaded with black blood closely resembling tar or treacle. The cavities of the heart on both sides are also filled in the same way, and sometimes contain concretions. The vessels of the brain are more or less gorged with black blood, especially at the base.

If the patient die after the complete establishment of the febrile stage, the body no longer presents the shrunken and livid appearance spoken of above, but rather the fulness and plumpness of the fever patient. The alimentary canal is not distended with the peculiar rice-water fluid, but contains fæcal matter tinged with bile. The mucous membrane, more especially that of the duodenum and contiguous portion of the stomach, is found more or less diffusely inflamed. The lungs present the evidences of a more or less advanced stage of pneumonia, in a majority of the cases, though the presence of this affection has been marked by no symptoms during life. The brain exhibits in its substance more bloody points than natural, together with some diffuse inflammation of its membranes, and serous fluid on the surface, and in the ventricles.

The only disease likely to be confounded with the Asiatic or malignant cholera is the bilious or sporadic cholera, especially in the severe forms in which it occurs in tropical climates. We borrow from Dr. Copland a part of the diagnostic differences which he has pointed out.

In sporadic or bilious cholera, the very dark, thick, and ropy appearance of the blood, the cold, wet, and shrivelled state of the surface, and its leaden, dark, or purplish colour, the almost total absence of pulse at the wrist, the very marked and rapidly increasing collapse of the powers of life; the disagreeable and earthy odour of the body, even during the life of the patient, the burning sensation between the pit of the stomach and the navel, the complete arrest of the glandular secretions, the cold tongue and mouth, and the coldness of the expired air which characterise the pestilential disease are entirely absent. The enormous mortality, notwithstanding the most energetic treatment, is another important feature of this last disease.

The changes undergone by the blood have received considerable attention, and the deficiency of water and saline materials, and excess of albumen in the serum, were pointed out by Dr. O'Shaughnessy in 1832. Dr. Garrod has recently confirmed the general accuracy of these results. He finds the specific gravity of the blood in cholera to be raised from its healthy average of 1065 to 1075 or 1080, and that of the serum from 1040 to 1050, or 1052. The fibrine, as compared with that of healthy blood, has, when coagulated, less strength and elasticity, and ceases to coagulate during the progress of the disease. He detected urea in the blood in greater quantity than in health, yet not in large amount in the stage of collapse, but in somewhat increased amount during reaction, which became excessive during the consecutive fever. The rice-water evacuations were always alkaline, and contained a large amount of saline matters, phosphate of soda, and common salt: the vomited matters were acid. (Med. Gaz. 23d March, 1849, p. 315.)

It must be observed, as bearing on the prognosis, that in this as in other epidemics, cases occurring during its first commencement are, cæteris paribus, more fatal than those arising at a more advanced period of its prevalence. We may mention in illustration, though the numbers are too small to be admitted as proof of this fact, that of the twenty cases treated in the Dreadnought, in 1837, eight died out of the ten first attacked, while only four of the remaining ten proved fatal.

As a general rule, children seem far less liable than adults to be attacked by the disease, and the chances of recovery diminish rapidly with the increase of age, few of those patients who have passed their fiftieth year being so fortunate as to escape. Atmospheric temperature can exercise little influence over a disease raging and destroying alike in the extreme heat of India and in the intense cold of Russia.

The period of incubation or latency of cholera probably varies considerably. Dr. R. Williams mentions the fact of its having broken out in the King's 41st regiment within three days of their landing at Madras, in May, 1832; whence we may infer that its shortest limit must fall within that time. In Hindostan, he tells us that, as a general rule, three days have been considered the longest period of latency. The examples, however, of vessels leaving the land in which the appearance of cholera on board has been delayed for six, eight, or even more days, seem to prove that this period may sometimes be much more protracted. Dr. Macculloch, in his Essay on Remittent and Intermittent Diseases, relates that a ship, anchored three or four miles off the coast of India at the time when the cholera was raging on shore, was visited by a breeze from the land of so deadly a character that five men employed on deck in getting her under weigh were almost instantaneously seized with the disease, which proved speedily fatal to all of them. Now, could we be certain that the destructive illness here spoken of was indeed the malignant cholera, we should have in this narrative conclusive evidence of an attack supervening immediately upon exposure to its exciting cause, and some insight, also, into the nature of that cause itself. We should recognise this as existing, largely diffused, in the atmosphere; as allying itself in character to malaria, or some endemic influence, rather than to the acknowledged contagions. But among so many recorded facts adduced in support of opposing doctrines, we cannot give a preponderating weight to any one. We can find neither in the theory of its atmospheric nature, nor yet in that of its contagious properties, the key to a satisfactory explanation of the phenomena exhibited in particular instances of its sudden outbreak, or its general progress; and we are compelled to confess, with Dr. Williams, that it is a "pestilence that walketh in darkness."

The predisposing causes of this fearful malady, and the preventive measures by which they are to be warded off, are so well explained in the Report of the Cholera Committee of the Royal College of Physicians, that we again resort to that document: —

"The disease has almost invariably been most destructive in the dampest and filthiest parts of the towns it has visited. The Committee would, therefore, urge on the public authorities the propriety of taking immediate steps to improve the state of the sewers and drains; to cover those which are open; and to remove all collections of decaying vegetable and animal matters from the vicinity of dwellings. They would, also, impress on individuals, especially of the poorer classes, the great importance of well airing their rooms, and of cleanliness in both their dwellings and persons.

"A state of debility and exhaustion, however produced, increases the liability to cholera. The Committee, therefore, recommend all persons during its prevalence to live in the manner they have hitherto found most conducive to their health; avoiding intemperance of all kinds, and especially the intemperate use of ardent spirits and other intoxicating liquors. A sufficiency of nourishing food; warm clothing, and speedy change of damp garments; regular and sufficient sleep; and avoidance of excessive fatigue, long fasting, and of exposure to wet and cold, more particularly at night, are important means of promoting or maintaining good health, and thereby afford protection against cholera.

"The Committee do not recommend that the public should abstain from the moderate use of well-cooked vegetables, and of ripe or preserved fruits. A certain proportion of these articles is with most persons necessary for the maintenance of health, and there is reason to fear that if they be generally abstained from, now that the potato-crop has in great measure failed, many persons, especially amongst the poor in large towns, will fall into that ill-condition which in its highest degree is known as scurvy, and that they will be the readier victims of cholera. The Committee likewise think it not advisable to prohibit the use of pork, or bacon; or of salted, dried, or smoked meat or fish, which have not been proved to exert any direct influence in causing this disease. Nothing promotes the spread of epidemic diseases so much as want of nourishment, and the poor will necessarily suffer this want if they are led to abstain from those articles of food on which, from their comparative cheapness, they mainly depend for subsistence.

"On the whole, the Committee advise persons living in districts in which cholera prevails, to adhere to that plan of diet which they have generally found to agree with them."

"The Committee declare themselves unable to recommend any uniform plan of treatment to be adopted in all cases of looseness of the bowels supposed to be promonitory of cholera, on the ground that, as such ailments may arise from various causes, it is safer to apply at once for medical assistance."

We believe, however, that the difficulty of laying down a general rule arises rather from the contrariety of medical opinions than from diversity of character of the malady to be treated. Hence authors have not hesitated individually to point out what they considered the proper principles upon which practice should be regulated in this respect. Thus Dr. Watson, in his lectures, having mentioned that the mere neglect of the diarrhœa frequently permitted it to run into well-marked and uncontrollable cholera, and that the employment of purgatives hastened or insured that catastrophe, recommends, as the proper plan of proceeding, to arrest the diarrhœa as soon as possible after its commencement, by astringents, aromatics, and opiates. He also advises his hearers, whenever a suspicion arises that this form of cholera is present in the community, not to try, in cases of diarrhœa, to carry off the presumed offending matter, but to quiet the irritation and to stop the flux as soon as they can." We do not concur altogether in the condemnation here passed on purgative medicines, believing that a single brisk cathartic will often bring under the control of absorbent and astringent medicines cases of relaxation of the bowels, which are without it obstinate, and having never witnessed the accession of cholera as a consequence of such treatment, even in seasons when the disease was prevalent. Nevertheless, it will perhaps be the safest course to employ at once some astringent; and for this purpose a draught of chalk mixture, with a scruple of aromatic confection, and five minims of laudanum, may be given every three or four hours till the loose state of the motions is corrected; and to this draught from five to ten minims of tincture of capsicum may be added, if there be symptoms of depression. The acetate of lead has been used, and apparently with benefit in this form of disease: a grain of that substance, with a fourth of a grain of opium and one grain of ginger or capsicum, made into a pill with a little extract of camomile, being given at intervals just mentioned. Sulphate of copper also, to the extent of a fourth of a grain, with ginger or capsicum, as before, may be tried instead of either of these. Tincture of catechu, too, in doses of twenty or thirty minims, in combination with the chalk mixture, greatly augments its astringent power. We are not aware that the decoction of logwood has been similarly employed, but this is among the most energetic of the remedies of diarrhœa, and may be conjoined with laudanum and aromatic confection, and sulphuric ether, or other stimulant, if necessary. A drink consisting of equal parts of milk and lime-water, flavoured with brandy or cinnamon, or both, seems not inappropriate; yet we confess that we have no experience of its use as a preventive of cholera: we know it only as very serviceable in some forms of diarrhœa in children. Some physicians, we believe, object to the employment of opium in any stage of this disease; but we think that, in the moderate doses just mentioned, its power in restraining the actions of the intestines will far more than counterbalance any injurious influence on the skin, or kidneys, or even on the brain.

After all, however, it is lamentable to observe how far both science and art are at fault in reference to everything pertaining to this disease. We have cited Dr. Watson, and might have cited Drs. Copland and Craigie and many others, in support of the importance and facility of preventing cholera by the arrest of the supposed premonitory diarrhœa. Dr. Baly, as we have seen above, having arranged in three classes the forms of diarrhœa connected with cholera, speaks of one only of the three as admitting of ready cure, or being amenable to ordinary remedies. And cases of this kind, he adds, are not, according to his observation, sufficiently numerous to explain the fact that the prevalence of cholera in a particular locality has sometimes undergone a great and almost immediate diminution, on measures being taken to discover every case of diarrhœa amongst the population, and to administer to persons thus affected opiate, aromatic, and astringent remedies, — a fact of which several instances have been published. It is, he thinks, not yet proved that a real relation of cause and effect, or any other relation than that of mere coincidence, has subsisted in these instances, between the adoption of preventive measures and the sudden decline of the epidemic; for the history of the disease teaches us that its prevalence in a particular locality is often not only of very short duration, but is also frequently as sudden in its cessation as in its rise. Now, if this be so, there is little cause to be satisfied with this part of our preventive treatment; nay, it becomes a question whether it has been conducted on right principles, whether it has been suggested by just analogies. We enter into no theory on this subject; but we have seen one rather severe case of actual cholera recover under the treatment recommended by Dr. Billing, —namely, the frequent administration of half a drachm of Epsom salts and the eighth of a grain of tartar emetic, dissolved in distilled water; and several cases of diarrhœa, occurring during the recent prevalence of cholera, got well rapidly under a more sparing use of the same medicine in our own practice. We conceive, too, that in such cases as are found to be intractable to the more common remedies, a strong chologogue cathartic of calomel, ginger, and jalap or scammony, would well deserve a trial.

We proceed to speak of the treatment of cholera when fully formed,—that is, after the vomitings and purgings of the peculiar rice-water fluid have set in; when collapse is impending or actually present, the pulse at the wrist being scarcely, or not at all, perceptible; the countenance of the patient haggard and ghastly, his eyes sunken, his features pinched and leaden, the skin of the hands shrivelled and cold and livid, his person moistened with a cold clammy perspiration, his limbs suffering from spasmodic pains of greater or less intensity, and his whole aspect being that of a moving corpse rather than of a living being.

The patient ought immediately to be put into bed, and laid in a horizontal position between blankets which have been well heated with a warming-pan, and due heat be sustained by proper applications to various parts of the body,—such as small bags filled with sand, bran, or salt, previously made hot; or we may employ, if more convenient, small stone jars filled with boiling water: these will be appropriate applications for the hands, arms, thighs, legs, and feet. Where none of these are at hand, large tiles made warm, and covered with flannel, may be substituted. Due heat will be most conveniently applied over the chest and abdomen by means of the tin case known under the appellation of a stomach-warmer, filled with boiling water, which is to be refilled, as well as the stone jars, as soon as they lose the necessary warmth.

We attach some weight to the remark which attributes little efficacy to the agency of external warmth in combating a disease no less fatal in its attacks under an Indian sun than in the temperate climate of Europe; nevertheless, the general opinion of the profession seems decidedly in favour of the attempt to restore the natural temperature of the body by means of external applications. A simple method, recommended by Dr. Copland, is that of wrapping the patient in blankets wrung out of hot water, on which oil of turpentine has been sprinkled, and these, again, may be covered with dry blankets. Care should, however, be taken that the heat is not excessive, as much distress and little benefit are thereby produced. The external applications should be somewhat, but not very much, above the temperature natural to the body, and will require renewing from time to time as they cool. Hot air and hot vapour-baths are not now much in vogue. Besides external warmth, stimulating liniments to the extremities have been resorted to, with a view of exciting the capillary circulation. The friction is found, also, to alleviate the spasms. Oil of turpentine has been much used in this way; a liniment of considerable strength may, also, be made by mixing equal parts of the tincture of cantharides and liniment of ammonia; or the tincture of camphor may take the place of either of these. Any or all of these may be tried and continued with such perseverance, or resorted to with such frequency as experience of the advantage derived demands or encourages. The general results, however, hitherto obtained have tended much to abate the zeal and energy with which these and other vigorous measures were pursued.

If the spasms be severe or distressing, they may be quieted by the inhalation of chloroform, not to the extent of producing narcotism, but merely carried on till the desired effect is produced, and repeated when necessary. There seems very satisfactory evidence from the experience of the cholera in England in 1848–49, that the spasms may in this way be easily controlled.

Among the remedies resorted to for the relief of particular symptoms may be ranked a combination consisting of half a drachm of oil of turpentine with two grains of camphor and one minim of creosote. This was given undiluted in some of the cases occurring in the Asylum at Bethnal Green, with the effect of arresting the vomiting, renewing the pulse, and for a time improving the general condition of the patient. The dose was not repeated except upon a recurrence of the vomiting after some hours, when it again seemed to allay the irritation of the stomach; yet it appeared to remove a symptom, rather than to have power against the fatal tendency of the complaint. As a palliative, also, the internal administration of chloroform may be of use, since it has been found to preserve its stimulant properties more surely than other remedies of the same class. It has been given in doses of from three to eight minims suspended in water by means of mucilage.

"In order to counteract the fatal tendency to collapse," writes Dr. R. Williams, "æther, ammonia, camphor, musk, castor, the essential oils, ardent spirits, wine, mustard, cajeput oil, and an endless number of medicines, having similar properties, have been exhibited in all countries; but the utmost that can be affirmed of them is, that they have been occasionally useful." In the worst cases of collapse, they seem to be rendered absolutely inert.

With the view of restoring and determining the circulation of the blood to the surface of the body from the interior parts, the action of full vomiting has been resorted to in spasmodic cholera by some medical practitioners of eminence, and it has been found to produce, for a time, the desired effect. An emetic consisting of a table-spoonful of mustard mixed in about six ounces of tepid water, and this divided into two doses, given within half an hour or so of each other, has been used for this purpose, but with so little ultimate advantage that this treatment is now generally abandoned.

Bloodletting has, of course, been tried as a remedy in this disease. With some it has been the sheet anchor. Thus Dr. Craigie writes, that in the established form of the disease the most successful remedy is bloodletting, practised seasonably and to sufficient extent; its use, however, must precede the stage of collapse, for when this is established it is no longer practicable. No rule, we are told, can be laid down regarding the quantity to be taken, unless that the blood should be allowed to flow till it becomes red, and till the pulse returns and becomes distinct.

Mr. Annesley and Mr. Boyd seem to have adopted this practice in India; and Dr. Craigie found it beneficial at Edinburgh. Some there are who attach importance to the abstraction of a small quantity of blood, to the extent of from five to ten ounces, or even less, as tending to relieve the distended state of the heart and large vessels, and to facilitate their contraction on their contents. This plan is advocated by Dr. Chambers, who advises the subsequent administration of stimulants. In one case which terminated successfully, a gentleman, who had practised in India, first took six or eight ounces of blood from his patient, and, after a full dose of calomel, gave every hour an ounce of the following mixture. It is hardly adverted to by the advocates of this plan how little the loss of six or eight ounces of blood from the arm, if so much can be obtained, can influence the congestion or oppression of the central organs. Either an amended theory, or the results of experience, have caused the lancet latterly to be seldom resorted to. An analytical table of sixty-two cases treated by bloodletting in the Castle-Hill Hospital at Edinburgh in 1832, and published in the Edinburgh Medical and Surgical Journal for Jan. 1849, supplies slender evidence in favour of its efficacy. Dr. Fraser indicates his suspicion that bleeding hastened dissolution in some of his cases.

Mercurial treatment has been tried; calomel has been given sometimes in half-drachm or scruple doses, repeated every three or four hours, or oftener; or, after a single full dose of a scruple, two grains have been administered every half hour till the collapse has begun to yield, and bilious motions have been procured; and each manner of giving this powerful medicine has its successes to boast of, though, alas, also many failures to confess. The calomel has sometimes been found after death in the stomach, detained, as it would seem, by the adherent mucus which probably shields the system from its effects. On the whole, confidence has been shaken in this as in other medicines; and it has become a question whether the recoveries after its use have been cures or mere coincidences.

The treatment of Dr. Stevens proceeds on the principle of supplying to the blood those saline ingredients in which it is found deficient in this disease, together with one calculated to promote oxygenation. It consists in the exhibition, every half hour, of half a tumbler full of water, in which are dissolved half a drachm of carbonate of soda, a scruple of common salt, and seven grains of chlorate of potass. This treatment is said to have been very successful in the cholera cases which occurred in Cold Bath Fields Prison in 1832; but, according to Dr. R. Williams, was followed by death in every one of several cases in which it was tried at St. Thomas's Hospital, and seems not to have won the confidence of the profession generally, although Dr. Copland regards it not unfavourably.

The injection of dilute saline solutions into the veins was largely practised in the former epidemic of 1831–32 by Dr. Mackintosh of Edinburgh, who employed half an ounce of common salt and four scruples of sesqui-carbonate of soda, dissolved in ten pints of water, at a temperature between 105° and 120° Fahr. The injection was carefully conducted, half an hour being allowed for the introduction of the whole quantity, and the immediate effects were most striking and encouraging; but they were only transient; and, though they might be renewed on a repetition of the operation, the fatal issue was not long deferred. Of 136 patients thus treated in Drummond Street Hospital, twenty-five only recovered. Dr. Baly mentions having tried saline injections into the veins in six cases, all of which terminated fatally. The salts employed were, in some cases, chloride of sodium and carbonate of soda, in others, chloride of sodium and phosphate of soda. Dr. Fraser conceives that in one instance he saved life by these means.

Dr. Billing's saline treatment, consisting of the exhibition every half hour of fifteen grains of Epsom salts, and an eighth of a grain of tartar emetic, dissolved in half an ounce of water, is founded on a supposed analogy existing between the cold stage of ague and that of cholera. We have known one patient recover under the use of this medicine, but conceive that the author has given no detail of his successes sufficiently ample to entitle his method to our confidence.

We have already spoken of opium as admissible and serviceable in moderate doses for the control of the preliminary diarrhœa. In the stage of actual collapse it is totally inefficient for good; it appears to be inert even in drachm doses of the tincture, frequently repeated; while its subsequent effects, if the patient survives the cold stage, are likely to be injurious. Narcotics generally exercise little or no influence upon the cramps or alvine discharges; in fact, their use, with the exception of that of chloroform, is almost abandoned, at least during the cold stage.

In addition to the multitude of other medicines vaunted in the treatment of this disease, the tinctura ferri sesquichloridi has been recommended by Mr. Hancorn, who says that its immediate effect in reducing the quantity of fluid ejected was truly astonishing, which gradually diminished after each dose, until it ceased altogether, and the cure was effected. This was in the epidemic of 1831–32; but the author has omitted to state both the dose of the medicine and the number or proportion of cases in which it was productive of these happy results. (Med. Gaz. Vol. VII. 1848, p. 453.)

Acetate of lead is a styptic which has been employed in the epidemic of 1848–49; but the last remedy introduced to our notice is the powder of cantharides, in doses of a quarter of a grain, with as much opium, and one grain of blue pill, given every hour, in a case published by Mr. Hodgson, in the Med. Gazette of March 16. 1849.

It is needless to proceed in the account of medicines which have been successively heralded into public notice, without establishing their claims to greater confidence than their predecessors. We may sum up the discouraging review in the words of Dr. R. Williams.

Every metal from arsenic to platina was exhibited; also the mineral acids, the various alkalies, phosphorus, strychnine, quina, kino, hæmatoxylum, and every known vegetable astringent, hydrocyanic acid, likewise the entire class of narcotics; and, when these failed, the patient has been made to respire oxygen or nitrous oxyde gas; and, with a view of imparting new powers to the sinking frame, transfusion of blood has not unfrequently been practised; but all these methods were equally unsuccessful.

Every heroic remedy having failed, the treatment of cholera, in the judgment of most practitioners, resolves itself almost entirely into obviating symptoms, checking the vomiting and purging, relieving the spasms, endeavouring to impart warmth, and, as far as possible, in the cold stage to support the waning powers of life. The consecutive fever is to be treated on the same principles as severe typhus fever; and the practitioner must be especially careful to ascertain the condition of the lungs, on account of the frequency with which after death signs of pneumonia have been discovered, which had manifested itself by no symptoms during life. The tendency to coma, from the circulation of urine in the blood, should also engage his attention, and may suggest the use of mild diuretics.

It is discouraging to have to confess the little mastery that medicine has obtained over this fearful disease. It is mortifying to acknowledge, that the passage of seventeen years has made us no greater adepts in its treatment in 1849 than we were in the first European epidemic of 1831–32; yet such are the admissions which we meet with on every hand, and such would be the inference from observations on an extended scale.

"The total mortality from cholera, for the 62 weeks ending November 24. 1849, was 14,601. The total mortality, in the same time, from diarrhœa was 3857; which, deducting the average mortality from this disease for a similar period during the 10 years 1838–47 (namely 1063), leaves 2794 deaths in excess, a large proportion of which must be attributed to the epidemic influence of cholera. The total mortality from dysentery amounted to 464 in the period in question, which is an excess of 278 above the average, this being about 186. The mortality in London from the late epidemic may then be set down as follows: —

Deaths from cholera - - - -	14,601
Excess of deaths from diarrhœa - - -	2,794
Excess of deaths from dysentery - -	278
Total deaths - - - -	17,673

The estimated population of the metropolis in 1849 was 2,206,076; and it will thus appear that 1 person died of cholera in every 151 of the inhabitants, or ·66 per cent, independently of the deaths from diarrhœa and dysentery."[*]

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[*] Mr. Grainger's Report.

It may be, as suggested by Dr. Baly, that till a specific be discovered, the poison of cholera acting in the human body can neither be neutralised, diminished, nor overcome. In the mean time, the employment of moderate warmth and stimulant liniments and epithems to the surface, the controul of the spasms by inhalation of chloroform, the free allowance of cold water to assuage thirst and dilute the blood, to which small quantities of salts might be added, in pursuance of Dr. Steven's views; the internal use of chloroform as a stimulant, and of such a compound as is mentioned above for the restraint of vomiting,—seem to offer the best chance of enabling the patient to bear up till the poison of the disease may have spent its force.

DIARRHŒA, OR LOOSENESS.

Diarrhœa consists in frequent and copious discharges of feculent matter by stool, accompanied by griping, and often at first with a slight degree of vomiting, but unattended either by inflammation, fever, or contagion. The presence of these, with tenesmus and an evacuation of blood and purulent mucus, with hardened balls or scybala instead of natural fæces, which prevail in dysentery, will always enable the practitioner readily to discern the two diseases from each other. It is to be distinguished from cholera morbus by the discharges not being very bilious, and also by there being no vomiting of bile.

In diarrhœa there is evidently a morbid increase of the peristaltic motion; which morbid increase is the effect of a variety of causes, applied either to the body in general, or acting solely on the parts affected.

Of the former may be noticed the application of cold to the surface of the body, so as to give a check to perspiration, and thereby determine the flow of blood more to the interior parts; as likewise emotions of the mind, and certain diseases,—as dentition, threatening or incipient hydrocephalus in children, as mentioned by Dr. Abercrombie and witnessed by ourselves, pulmonary consumption, fever, measles, Bright's disease, retrocedent gout, and some affections of the liver.

Of the latter may be enumerated, first, matters taken into the stomach, and acting either from their quantity, as in the case of overcharging the organ, or, from their nature, on the state of the stomach itself, producing fermentation,—as acid fruits, and also oily and putrid substances, and purgative medicines; secondly, matters generated in the body, and thrown into the intestines,—as acrid bile, pancreatic juice, purulent matter, &c.; thirdly, mucous matter poured from the mucous follicles of the intestines themselves, in consequence of an increased excretion, and producing what is known by the name of diarrhœa mucosa. This species of the disease is very frequently met with among the negroes on the plantations in the West Indies, and often assumes a chronic form, and either passes into dysentery, or is followed by a very great depression of the vital power.

In diarrhœa, each discharge is usually preceded by a murmuring noise and flatulence in the intestines, together with a sense of weight and uneasiness in the lower part of the belly, which cease on the discharge taking place, but are again renewed before the one which is to succeed ensues. The appearance of the stools is various. Sometimes they are thinner than natural, from the admixture of a larger quantity of fluid poured out by the exhalants of the intestines than common; sometimes they are slimy, and sometimes they are green, when first discharged; and now and then they are of a dark-brown colour, and very fetid. Sometimes diarrhœa is attended with a discharge of unaltered ingesta, particularly in young children, in which case the term lientery is applied to it. As the disease advances, the stomach becomes affected, and sickness, nausea, and vomiting occasionally prevail; the countenance turns pale, and the skin is dry and rigid. If it continues for any length of time, universal emaciation, dropsy of the lower extremities, and relaxation of every part, ensue, together with a great loss of strength.

A peculiar species of chronic diarrhœa is occasionally met with among elderly persons, particularly those who have lived for any length of time in a warm climate, and suffered from a diseased state of the liver or spleen. It consists in a copious evacuation of matter resembling a mixture of lime with water, sometimes being of the consistence of pudding, and very frothy on the surface. The disorder occasions great debility, is very liable to occur whenever any thing harasses the mind, is very little under the controul of medicine, and ultimately wears out the constitution. The exact nature of this variety of diarrhœa is not accurately known, but seems somewhat connected with chronic thrush. This peculiar form of disease was first pointed out by Dr. Baillie in the fifth volume of the Transactions of the College of Physicians. We believe it to be a rare disease, as we can call to mind only one case of this nature occurring to ourselves, the progress and issue of which we were not able to watch or ascertain.

With the exception of the above variety, and of those forms of diarrhœa which accompany pulmonary consumption, and fever, in which our prognosis must depend upon the danger involved in the primary disorder, the complaint is for the most part amenable to medical treatment so as to justify us in anticipating a favourable result.

Where it attacks pregnant women, or those in a puerperal state, it is generally to be considered as attended with some danger, either directly or as a consequence of miscarriage.

Dissections of diarrhœa which have terminated fatally have shewn, that, where it prevailed as a primary disease, ulceration of some portion of the intestines is the morbid change most usually met with; in which cases the inner membrane is often abraded for a considerable extent, and its muscular coat laid bare. They have likewise shewn that the follicular glands are the most frequent seat of such ulcerations, and these now and then become fungoid. Very frequently the aggregate glands are more developed than usual, so as to be enlarged and prominent.

"On the whole," says Dr. Craigie, in his Practice of Physic, "I think that it is possible to adduce conclusive evidence to show that the frequent fluid alvine discharges to which physicians have given the name of diarrhœa, are in the greater number of cases to be referred to a state first of irritation, and then of inflammation of the mucous surface of the intestines spreading in general over a considerable extent, and rarely penetrating to the submucous filamentous tissue or to the muscular fibres."

When it has been symptomatic, the morbid changes of the organ belong to the primary diseases, of which the diarrhœa is merely a symptom.

In the treatment of diarrhœa it will be necessary to attend to the following indications: —

First, To obviate or remove the morbid cause;

Secondly, To suspend the increased action which constitutes the disease; and,

Thirdly, To restore the impaired tone of the parts.

When diarrhœa has arisen from excess or repletion, or from crude or acrid matter in the stomach and intestines, the first indication is best answered by giving a brisk purgative, by which the whole intestinal canal will be thoroughly freed from irritating ingesta, and from morbid secretions, and disposed for rest. In recent cases occurring in adults, we think a powerful purgative in the first instance to be preferred to one of milder character, because it not only more quickly and completely removes offending matters, but produces exhalation also, and thus relieves congestion. It strongly stimulates the excretory ducts of the liver and pancreas, and unloads these important organs. We think the greater energy of action well compensated, by the brevity of its duration, by these accompanying advantages, and that it is on all accounts far preferable to the less effectual and more continuous irritation of some milder laxative: nevertheless, we give several forms below, to be employed as individual judgment may suggest.*

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* ℞ Pulv. Radic. Jalap. gr. xij. ad gr. xv.	* Take Powdered Jalap, twelve to fifteen grains.
Hydrarg. Chlorid.	Calomel,
Pulv. Zingib. ā gr. ij. ad gr. iij.	Powdered Ginger, of each two to three grains.
Misce; fiat pulvis statim ex melle sumendus et alternis auroris vel p. r. n. repetendus.	Make a powder to be taken immediately in honey, and to be repeated every alternate morning, or as occasion may require.
Vel,	*Or,*
℞ Pulv. Radic. Rhei, gr. xv.	Take Powdered Rhubarb, fifteen grains.
Hydrargyri Chloridi,	Calomel,
Pulv. Zingib. ā gr. iij.	Powdered Ginger, of each three grs.
Fiat pulvis ut supra dandus.	Make a powder to be given as above.

Having accomplished this first object, the removal of irritating matters, our next is to soothe the bowels by a careful attention to the diet, and by the exhibition of suitable medicines. Now for this purpose we know of none preferable to chalk, which is capable of neutralising acid fluids, of absorbing acrid ones, and is, besides, we believe, grateful to membranes of a mucous character when highly irritated or inflamed. We say this from having often witnessed the beneficial effects of chalk as an ointment in irritable eruptions of the skin, and from a belief that its advantages are not fully appreciated by the profession.

In the vast majority of cases of simple diarrhœa which have come under our care, and they are not a few, we have found the greatest relief to be obtained from the continued employment, as twice or thrice a week, of such a purgative with the intermediate use, of the chalk mixture either alone, or with five drops of laudanum added to each dose, or, again, where the relaxation was obstinate, with twenty drops of tincture of catechu mixed in it also.* We have looked for, and have found, great benefit from this plan of treatment, in all cases where there has been an absence of blood in the motions, where the pulse has been either natural in frequency, or, if accelerated, soft, and feeble, and where there has been no marked heat or dryness of the general surface of the body, and no considerable thirst.

We are not here speaking, be it remembered, of the peculiar diarrhœa of continued fever, or of that of pulmonary consumption, or, again, of that which follows measles, the treatment of which must be sought for under the heads of the several diseases in which they are wont to occur; and the same remark will apply to those periodic diarrhœas, of which we have seen several examples in the

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Vel,

℞ Pulver. Scammon. gr. viij. ad gr. xij.
Magnes. Carbon. ℈j.
Mistur. Acac. ʒij.
Syrup. Papav. ʒj.
Aquæ Piment. ʒix.
Misce; fiat haustus ut supra exhibendus.

Vel,

℞ Olei Ricini, ʒvj.
statim et p. r. n. sumendus.

* ℞ Misturæ Cretæ, ℥iss.
Confection. Aromat. gr. x.
Misce; fiat haustus ter die vel sæpius sumendus.

Vel, ubi dolor aut vomitus adfuerit,

℞ Misturæ Cretæ, ℥iss.
Tincturæ Opii, ♏v.
Fiat haustus ut antea dandus.

Proderit interdum ubi vehemens diarrhœa ægrum vexaverit vel huic vel illi Tincturæ Catechu ♏xx. adjungere.

Or,

Take Powdered Scammony, eight to twelve grains.
Carbonate of Magnesia, a scruple.
Mixture of Acacia, two drachms.
Syrup of Poppies, one drachm.
Pimenta Water, nine drachms.
Make a draught to be taken as before.

Or,

Take Castor Oil, six drachms,
to be taken immediately, and as occasion may require.

* Take Chalk Mixture, an ounce and a half.
Aromatic Confection, ten grains.
Make a draught to be taken thrice a day or oftener.

Or, when pain or vomiting shall have existed,

Take Chalk Mixture, an ounce and a half.
Tincture of Opium, five minims.
Make a draught to be given as before.

It will be advantageous sometimes, when a violent purging has harassed the patient, to add twenty minims of Tincture of Catechu to the latter or former draught.

current year, which have yielded readily, and, as we believe, would only have yielded, to medicines adapted to the cure of intermittent diseases of which they were manifestations. But for that irritable or excited state of the intestinal tube, of which the instances are numerous, whether arising from unwholesome ingesta, or from the impression of external cold, we have found no treatment so effectual as that which combined the aims of removing from time to time the accumulated contents, whether food or altered secretions, by means of purgatives, which at the same time cause an improvement in the secretions themselves; while the parts and the system are simultaneously first soothed, and then strengthened by such remedies as are calculated to insure these ends. So soon as this object shall have been attained, as the digestions have become natural, or only modified in such a way as may be due to the medicines employed, active purgation becomes no longer necessary, and the mildest laxatives should be resorted to; while remedies possessing at once astringent and tonic properties should be given. Such are the decoction of logwood, or of tormentilla, and these may at first be given diluted with equal parts of lime water, and subsequently alone; the mistura ferri composita, too, of the Pharmacopœia is well suited to give tone to the system of such as have been greatly reduced by the previous long continuance of disease. Other forms for astringent and tonic draughts are subjoined.*

Where there is a subsequent tendency to costiveness, the infusions of hops, of calumba, of cascarilla, or of gentian, with just

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* ℞ Cort. Cascaril. contus.	* Take Cascarilla Bark, bruised,
—— Simaroub. c. āā ʒij.	Simarouba Bark, bruised, of each two drachms.
Coq. ex Aq. Fontan. Oj. ad f. ℥viij. Colat. adde	Pure Water, one pint. Boil them slowly until reduced to eight ounces; strain off the liquor, and add
Spirit. Cinnam. f. ℥j.	Spirit of Cinnamon, one ounce.
Tinct. Kino, f. ʒij. M.	Tincture of Kino, two drachms.
Ft. mistura, cujus sumat cochl. ampla iij. ter quaterve in die.	Of this mixture, let three large spoonfuls be taken three or four times every day.
Vel,	*Or,*
℞ Infus. Cort. Cuspariæ, f. ℥vj.	Take Infusion of Cusparia Bark, six ozs.
Tinct. Calumb. f. ℥j.	Tincture of Calumba, one ounce.
——— Catechu, f. ʒij.	——— Catechu, two drachms.
Spirit. Pimentæ, f. ℥ss. M.	Spirit of Pimenta, half an ounce.
Ft. mistura.	Mix them.
Vel,	*Or,*
℞ Cort. Granat. contus. ʒij.	Take Pomegranate Bark, bruised, two drachms.
Rad. Simaroub. c. ℥ss.	Simarouba Bark, bruised, half an ounce.
Aq. Ferventis, f. ℥xvj. Macera per horas duas, et colaturæ adde	Boiling Water, sixteen ounces. Let them infuse for two hours; strain off the liquor, and add to it
Confect. Aromat. ʒj.	Aromatic Confection, one drachm.
Tinct. Card. Comp. f. ℥j. M.	Compound Tincture of Cardamoms, one ounce.
Ft. mistura, cujus sumantur cochlearia larga iij. ter quaterve in die.	Of this mixture, three large spoonfuls are to be taken three or four times a-day.

enough of the infusion or tincture of rhubarb, or of those of senna to keep the bowels sufficiently relieved, will answer well for the completion of the cure.

In women, if the diarrhœa have produced either displacement of the womb, or bearing down pains, or other kindred symptoms of distress; or if it appear to have arisen, or be kept up, as we believe is sometimes the case, by irritation of that organ; the milder aperients,—as castor oil, or a draught containing magnesia and scammony, which may be made as gentle in its action, and is less nauseous in taste,—should be substituted for the more active purgatives; while in these cases, Dover's Powder in five-grain doses given in a saline mixture, or in an astringent vehicle,—as infusion of Krameria,—will often be attended with the best results. The local abstraction of blood will often be necessary also.

The present is not the place for discussing at large the treatment of virulent purgings arising from poisons, or from the violent action of medicinal substances. One universal rule, however, is to be observed in all these cases,—viz. that the use of the drug which has produced the mischief must be at once abandoned. This measure will often be enough to arrest the inconvenience in other cases, as where a painful diarrhœa attends the full action of mercury, or colchicum on the system, a dose of castor oil, with fifteen or twenty drops of laudanum, will carry off the irritation arising from the former; while chalk mixture, with five drops of the same tincture, repeated several times a day, will put a stop to the troublesome symptoms produced by the latter medicine.

When gout, repelled from the extremities, falls on the intestines and occasions a diarrhœa, it must again be solicited towards the extremities by warm fomentations, cataplasms, or blisters. The perspiration is at the same time to be promoted by drinking plentifully of wine whey. If these means fail, a gentle dose of some stomachic purgative—such as the tinctura rhei compos.—may be given; after which the absorbent mixture just recommended may be used in frequently repeated doses, with an addition of ten or twelve drops of tinctura opii to each.

When it proceeds from a use of unwholesome water, and the situation of the person will not admit of its being changed, the addition of a small quantity of quick-lime, chalk, or the like, possibly may correct this effect.

The diarrhœa which attends on dentition should never be checked, unless it prevails in so high a degree as to prove hurtful

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Vel,	*Or,*
℞ Decoct. Cinchonæ, f. ℥jss.	Take Decoction of Peruvian Bark, one ounce and a half.
Tinct. ejusd. C. f. ʒj.	Compound Tincture of the same, one drachm.
——— Kino, f. ʒss.	Tincture of Kino, half a drachm.
——— Opii, ♏v. M.	——— Opium, five minims.
Ft. haustus, 4tis aut 6tis horis sumendus.	Mix them for a draught, to be taken every four or six hours.

to the child; in which case four or five grains of rhubarb, with as many of magnesia, may be given. This, if repeated three or four times, will generally correct the acidity, and put a stop to the griping stools. Lancing the gums should also be had recourse to in these cases, if there be much vascularity and tenderness.

In the same way diarrhœa in children symptomatic of cerebral affection should be treated by remedies suited to the primary disorder. In a robust boy, between three and four years of age, in whom violent diarrhœa was accompanied with drawing in of the thumbs, disturbed sleep, and craving appetite, strong purgatives, alternated with chalk mixture, produced considerable amendment in the symptoms; while the most marked benefit was derived from the application of leeches behind the ears.

We object, as a general rule, to an immediate recourse to opiates in all cases of diarrhœa. We look upon their action as palliative rather than curative, and their employment in many cases to be unnecessary, and in many, as those of children, to be objectionable. Yet, sometimes for allaying pain, and at others for procuring rest at night, and, again, for the relief of tenesmus, they will be found valuable adjuncts to the other treatment. In the diarrhœa of consumption they are of great service, giving some relief to the pulmonary symptoms, as well as to the abdominal; and admitting readily of association with the other remedies required for the former.

Where it is thought right to give an opiate at bed-time, from fifteen to twenty grains of the compound kino powder, or twice as much of the compound chalk powder, or from three to five grains of the compound soap, or compound storax pill will be found useful forms.

To relieve tenesmus, fifteen or twenty drops of laudanum may be given as an enema in two ounces of starch, or in half the enema terebinthinæ of the Pharmacopœia.

From whatever cause a diarrhœa proceeds, whenever it is found necessary to check it, the diet ought to consist of rice boiled with milk and flavoured with cinnamon, together with preparations of sago or Indian arrow-root, and the lighter sorts of meats, roasted, as veal, lamb, or chickens. Weak brandy and water, or diluted wine, may be substituted for malt liquor as a common drink.

Those who are liable to frequent returns of this disease, either from a peculiar weakness, or too great an irritability of the bowels, should live temperately, avoiding crude summer fruits, most kinds of vegetables, all unwholesome food, and meats of hard digestion, and malt liquors, as also cider. They ought likewise to beware of cold, moisture, or whatever may obstruct the perspiration; and they should wear flannel next to the skin throughout the year.

There are some instances of most obstinate diarrhœa, in which the disease appears to be kept up by some local, probably malarious, influence, and in these a change of residence is indispensable for the enjoyment of health.

DIABETES.

Weariness and disinclination to motion or exertion, with the feelings of debility, dryness and harshness of the skin, costiveness, great thirst, a voracious appetite, accompanied by gradual emaciation of the whole body, and a frequent discharge of urine containing a large proportion of saccharine and other matter, which is generally voided in a quantity far exceeding that of the aliment or fluid introduced, are the characteristics of this disease. The urine of diabetic patients is almost always of a pale straw colour. Its smell is commonly faint and peculiar, sometimes resembling sweet whey, or milk diluted with water. In a great or less degree its taste is decidedly saccharine. The quantity of urea is generally much diminished. For the most part it contains little or no uric acid. Sometimes diabetic urine contains a little blood, and not unfrequently albuminous matter of a cheesy kind.

It is a remarkable circumstance noticed by Dr. Prout, and more recently by Dr. G. O. Rees, that the secretion of saccharine matter suddenly ceased from time to time in some cases of this disease, an excessive quantity of urea being found in the urine, on the disappearance of which the sugar returns as before. This very remarkable alternation of excessive secretion of urea with that of sugar, is not to be considered as affording any favourable indication, but the presence of lithic acid as a deposit, observed for the most part in incipient cases, is thought to have a better import.

We may lay it down as a general rule, that where a patient, with increased or unimpaired appetite, complains of much thirst and loss of flesh and strength, and is found at the same time to have a dry skin, and to pass water in much larger quantities than while in health, there is strong reason to apprehend that he is labouring under diabetes. But this suspicion can only be established or negatived by an examination of his urine, and the proof of the presence or absence of saccharine matter in it. Now the fact of the urine having a very high specific gravity, as from 1·025 to 1·033 (that of healthy urine ranging from 1·015 to 1·025), will afford strong confirmation of our fears; and it will always be desirable, in order that we may form some estimate of the amount of solid matters thus excreted in a given time at various stages of the malady, that the specific gravity should be at once ascertained by means of a small hydrometer adapted to this purpose, and commonly sold under the name of urinometer. But other means must be resorted to for the certain determination of this question. Several methods have been recommended of testing the presence of sugar in urine. It may generally be recognised by the taste; but this is neither the most delicate nor most agreeable manner of seeking for it. The method which at the present day is generally considered the simplest, the most sensitive, and least objectionable, is that proposed a few years back by Mr. Moore of Birmingham, and now currently spoken of as Moore's test, after its author. A small quantity of the suspected urine — as a drachm — is to be put into a clean glass test tube, with about half its bulk of pure liquor potassæ, and the mixture is to be boiled by means of a spirit lamp. When diabetic sugar is present, a reddish brown colour will be produced, the depth of which varies with the quantity of saccharine matter, being sometimes very dark indeed, and which is very perceptible, even when the quantity is minute. A little care only is necessary in conducting this experiment, in the first place, to prevent too sudden an application of heat from charring a portion of the sugar upon the side of the tube, and causing it to break; and in the second place the ebullition should be continued for as long, in fact, as the colour goes on darkening, for the change commences only at or near the boiling point, and the heat must be sustained for a minute or two in order that the full effect may be produced. Cane sugar added to urine does not give rise to the same result: indeed, this test is believed to be free from all fallacy. Trommer's test also serves to detect the sugar of diabetic urine. It consists in boiling the urine with about half its volume of liquor potassæ, and then adding a few drops of a solution of sulphate of copper; a reddish or yellowish-brown precipitate of suboxide of copper is formed when sugar is present. Another much older and very excellent test is that by fermentation; but this is neither so expeditious or convenient as that just described. It deserves notice however. If a small portion of yeast be stirred in with a quantity of diabetic urine, — as half a pint or less, — and the mixture be kept at a moderate temperature, fermentation will visibly take place, accompanied with the evolution of carbonic acid, which, if the process has been conducted in a close vessel, may be collected, measured, and tested, or its nature may be ascertained by transmission through lime-water, when a turbidity is produced in consequence of the formation of carbonate of lime. If, when the fermentation is complete, we distil over a small portion of fluid from the urine which has undergone this process, we shall obtain a spirituous liquid, from which we can best separate the water by placing it in a narrow vessel as a test tube, and adding recently dried carbonate of potass as long as it continues to be dissolved. In this way the fluid will become separated into two, the lower consisting of a strong aqueous solution of the alkaline salt, the upper of spirit, which will at once take fire on holding a glass rod dipped in it in the flame of a candle. As there is always plenty of material for examination we may employ this latter as well as the former test; but it requires three or four days at least for its application. When a given quantity has been thus acted on, and the resulting gas has been exactly collected and accurately measured, we obtain an approximate value of the quantity of sugar existing in the urine, by allowing a grain of that substance for every cubic inch of fixed air. After all, however, an observation of the specific gravity from time to time will give us very sufficient information as to the progress of our patient if a record be also kept of the quantity of urine voided, and Moore's test be occasionally employed to show the continued presence or absence of saccharine matter. It is not easy, in truth, to separate exactly the sugar from the salt and other matters dissolved in the urine, so as to determine the quantity of each. It is enough, however, for all practical purposes, that we should be able to form some estimate, even a rough one, of the total amount of solids escaping through the kidneys. Dr. Henry has framed a table for this purpose, which has been said to give a somewhat too high result, both by Dr. Day and Dr. Letheby, but the general correctness of which is commended by Dr. G. O. Rees. The law of this table, which is much more available for use than the table itself, may be thus stated. The quantity of solid matter contained in each fluid ounce of urine may be found expressed in grains by multiplying the number above 1000 indicated on the urinometer by 1·2, or by $\frac{6}{5}$. Thus, if the urinometer gives 1·050 as the specific gravity, we have 50 multiplied by 1·2, equal to 60 grains as the amount of solids passed with each ounce of water, from which the whole daily loss can very readily be ascertained. In this way we can at any period find out how far the average amount of loss in health is exceeded, and what progress is making towards a return to the natural standard. It will be well, in order to judge of the extent of inroad which the disease is making on the health, and the effects of treatment, that the patient's weight should be periodically taken and recorded.

We are speaking throughout this article, it must be borne in mind, of that Diabetes which has received the epithet mellitus in consequence of the presence of saccharine matter, as first discovered by Dr. Willis at the commencement of the 17th century. It is open to doubt whether there really be such a disease as Diabetes Insipidus, whether what has been called so is more than a symptom; and, at all events, no such disease either merits or will receive a notice in the present work.

The disease is met with in both sexes, and at various ages; but it chiefly prevails among men, particularly those who have arrived at an advanced period of life. It is observed in all ranks of society, and appears to be more frequent in cold than in hot climates. Dyspeptic complaints of long standing may probably favour the disposition to diabetes. Persons of a shattered constitution are most subject to its attacks. The few cases which have occurred to me in practice all arose in persons who had addicted themselves to spirituous liquors, and who at the same time fared hard and were much exposed to cold.

Diabetes may be occasioned by a use of strong diuretic medicines, intemperance of life and hard drinking, excess in venery, severe evacuations, immoderate use of acid drinks, excessive labour joined to a poor vapid diet, and the depressing passions, or by any thing that tends to produce an impoverished state of the blood, or general debility. Some individuals have an hereditary disposition to the disease, as has been noticed in a communication from Dr. Storer to Dr. Rollo. In some cases it has arisen from an exposure to cold and suppressed perspiration. It has, however, taken place, in many instances, without any obvious cause.

Of these so-named causes, venereal excesses, exposure to cold, hereditary pre-disposition, and perhaps an immoderate use of common sugar, are probably those which best deserve to be admitted.

In entering upon the theory or pathology of this disease we cannot detail all the various opinions that have been entertained with regard to it: we shall touch only upon such of those of older authors as have received some confirmation from the progress of science in recent times.

The late Dr. Cullen offered it as his opinion, that the proximate cause of this disease might be some fault in the assimilatory powers, or in those employed in converting alimentary matters into the proper animal fluids; which theory has since been adopted by Dr. Dobson, and still later by Dr. Rollo, Surgeon-General to the Royal Artillery. The liver has been thought by some to be the chief source of the disease; but diabetes is seldom attended with any affection of this organ, as has been proved by frequent dissections, and when observed, it is to be considered as accidental.

Dr. Rollo informs us, in his ingenious publication, that, from having duly investigated the most remarkable circumstances and changes which took place during the cure in several cases of this disease, he thinks himself authorised to draw the following inferences, among others.

1st. That the diabetes mellitus is a disease of the stomach, &c., proceeding from some morbid change in the natural powers of digestion and assimilation.

2d. That the kidneys and other parts of the system, as the head and skin, are affected secondarily, and generally by sympathy, as well as by a peculiar stimulus.

3d. That the cure of the disease is accomplished by regimen and medicines preventing the formation of sugar, and diminishing the increased action of the stomach.

4th. That confinement or entire abstinence from every species of vegetable matter, or a diet solely of animal food, with emetics, hepatised ammonia, and narcotics, comprehend the principal means to be employed.

5th. That the saccharine matter of the disease is formed in the stomach, and chiefly from vegetable matter, as has been shewn by the immediate effects produced by the abstinence from vegetable matter, and the use of animal food solely.

6th. That acescency is predominant in diabetic stomachs, which continues even some time after the entire abstinence from vegetable matter, and after the formation of sugar; and that while such acescency remains, the disposition to the disease may be supposed to continue.

It was long matter of doubt whether this disease was to be considered as having its primary seat in the kidneys, or in the stomach: we have here referred to some authors who embraced the latter opinion; but there were not wanting able writers to advocate the former. Thus we find Dr. Prout, at page 71. of his work on Urinary Diseases published in 1825, speaking indeed with hesitation, yet manifestly leaning on the side of those who considered the kidneys to be primarily or principally in fault. He writes thus: "The proximate cause of diabetes is exceedingly obscure. A great variety of opinions has indeed been advanced on this point; but as the subject has hitherto received no satisfactory elucidation from post mortem or other inquiries, and is actually at this moment not understood, I do not think it necessary to enter upon it here. I have often thought, however, that there is nothing more wonderful about this than in any other natural process, and that, if we understood how the animal economy forms fat, or the liver bile, we should be at no loss to understand how the kidneys sometimes form sugar."

In February 1836, Mr. Charles Maitland announced his discovery of sugar in diabetic blood, and at once pointed out how "greatly the hypothesis of Rollo — that diabetes originates in the stomach — was confirmed by the circumstances that sugar exists in the blood, as the want of proof of this fact had been generally considered its weak point." At a somewhat earlier date Dr. Ambrosioni of Milan had published, in the Annali Universali di Medicina for April 1845, the result of an experiment, upon the whole more conclusive, as in this case the presence of sugar was indicated not by its taste only, but by the production of vinous fermentation on the addition of yeast. This conclusive experiment of Dr. Ambrosioni was not, however, generally known in England prior to Mr. Maitland's publication.

In May 1837, Mr. M'Gregor of Glasgow published in the London Medical Gazette an account of some experiments conducted by him, with the view of elucidating the nature of diabetes, which tended materially to advance our knowledge of this disease. Not only did he confirm the results previously obtained by showing the existence of saccharine matter in the blood of several diabetic patients which he examined, but he proved the presence of the same ingredient in the saliva also. Besides this, he showed that in persons partaking of a mixed vegetable and animal diet, saccharine matter was to be found abundantly in the contents of the stomach, at a certain period of the digestive process, whether the individuals experimented upon were labouring under this disease, or in a perfectly healthy condition. In the case of a diabetic patient, he obtained distinct evidence of the existence of sugar also in the stools. Subsequently to the date of these researches, many chemists — as Drs. G. O. Rees, Day, and others — have succeeded in obtaining sugar from diabetic blood; while its presence has been recognised in every secretion of the body. Thus

Dr. Day and others have found it in the perspiration: M. Capezzuoli is said to have detected it in the pus evacuated from a small abscess in a diabetic patient, in the serous fluid within the pericardium, and in bile collected from the gall-bladder in another diabetic person after death; while Dr. Francis of Manchester obtained it from the expectoration of an individual suffering from diabetes with pulmonary consumption; and Dr. T. Chambers proved its presence in the fluid of the ventricles of the brain in the case of a lad, in whom the disease had run its course with singular rapidity, and without having been modified by medical discipline or treatment. These well attested facts make it abundantly evident that the foreign material which is thus found in the stomach and intestines, which circulates with the blood, and is carried to every organ, and every part of the body, and mixed in all secretions wherever they take place, can only be derived from some central organ where the materials of the blood are elaborated and fitted for the uses of the system at large. And if this be so it seems a necessary consequence that those organs which are engaged in digestion and assimilation must be the parts primarily in fault. While of these there is none that performs so prominent and important a part in the accomplishment of these objects as the stomach. We shall quote Dr. Prout's more recent opinions on this point as stated in the third edition of his book published in 1840.

"In diabetes, sugar has been repeatedly ascertained to exist in the sanguiferous system, a fact unequivocally demonstrating that the assimilating organs had failed to convert the saccharine aliment into the constituent principles of the blood. Now, the reduction of all the forms of the saccharine principle appears to be accompanied by the development of a low sugar, which low sugar, in the healthy condition of the stomach, is speedily converted into albuminous and oleaginous matters. Hence, as the existence of sugar in the stomach is only momentary, or, as it were, a point in transitu, its presence in the healthy stomach is with difficulty detected. In diabetes, the reducing power of the stomach is for the most part morbidly active, while the converting power is more or less suspended or paralysed. In the diabetic stomach, therefore, sugar is found in large quantity, particularly when vegetable aliments are taken, and from the stomach the sugar readily passes into the sanguiferous system, as before stated. The first step in the derangements, therefore, producing the disease called Diabetes does not consist, as some have supposed, in the development of sugar in the stomach, which is a natural process, but in the greater or less destruction of the converting, and, consequently, of the still more important organizing, functions of the assimilating organs."

Dr. G. O. Rees, in a lecture published in the Medical Gazette of 27th of August 1847, calls attention to the importance of the saliva in the process of digestion, and proceeds to say "that the diseased action observed in diabetes may, in all probability, be correctly attributed to a deficiency of some principle which in health corrects the action of the animal diastase, and prevents its producing a further change in the dextrine formed from starch. Whether," he proceeds, "this moderating power belongs to the gastric juice or not, we cannot at present say, but certain it is that in health sugar is rapidly destroyed during digestion. Thus in health, if starch be taken into the stomach, the changes for the formation of sugar go on only as far as the production of dextrine, and there cease; while fatty matter is produced instead of sugar as a final result."

From some experiments of Dr. Percy's, he infers that the blood appears to exert some action on diabetic sugar when injected into the veins; at least he thinks it probable that it is changed when present only in *small quantity*, as is the case in healthy digestion.

He concludes, therefore, that we have in health the means of checking the entrance of sugar into the urine, both by the actions of chymification and sanguification, while in diabetes sugar is formed in such quantities during chymification as to overcome the transforming power present in the blood.

Bouchardat, according to M. Simon (vol. i. p. 327. of the translation), directs attention to the fact that the presence of sugar in the blood can only be incontestably proved when venæsection has been performed two or three hours after dinner, and that no traces of it can be found in blood drawn in the morning: he states that he has himself corroborated this observation.

Dr. Percy relates, at page 153., that he fed a patient for four successive days on a diet exclusively animal, with the exception of a small quantity of whisky to flavour the water which he drank, yet sugar in considerable quantities was found in the urine passed on the second, third, and fourth days. He rightly conceives that this experiment confirms the result of one of Mr. M'Gregor's, who found sugar in the contents of the stomach of a man similarly disciplined, and justifies the conclusion that in diabetes mellitus grape sugar may be formed out of previously assimilated matter, or out of the protein (should we not rather say out of the nitrogenous?) series of compounds of the food.

Now if this last inference be correct, there can no longer exist any difficulty, such as has been entertained by some, in accounting for the wasting, not only of the fat, but of all the other soft solids of the body under the influence of this disease.

We have met with few attempts to assign a specific cause for this altered action of the digestive organs. M. Mialhe, in the Annales de Chimie for September 1844, states, as the result of his researches, that hydrocarburetted alimentary substances — as grape sugar, gum of starch, dextrine, &c. — can undergo assimilation only after having been changed by the alkalies of the blood into new products. Persons, he says, affected with diabetes do not perspire;

whence he argues that, as all the cutaneous secretions are acid, it follows that, when the secretions are suppressed, the presence of free or carbonated alkalies in the blood becomes impossible, and consequently the chemical action, which is the primary cause of the assimilation of sugar, becomes impossible also, which causes the sugar to come from the body with all its original properties.

It may at once be objected to this theory that the suppression of the perspiration, though a general, is by no means a universal, concomitant of this disease. We have recently had a patient labouring under diabetes who perspired profusely, yet without any cessation of the excretion of sugar; and other similar cases are on record. It is, besides, a defect in the evidence on which this hypothesis is based, that the absence or deficiency of free alkaline materials in the blood is matter only of inference, instead of being proved by direct observation.

Mr. Busk, when examining microscopically portions of the stomachs of two diabetic patients which had been sent to him by Dr. Percy, observed numerous confervoid sporules in the adherent mucus on both occasions; whereas nothing of the kind was to be found in that of the stomach of a healthy man who was scalded to death; while an immense number of actively moving vibriones were seen in the latter case which were altogether absent in the former. Hence he concludes that the peculiarity of the diabetic stomach appears to consist in the presence of confervoid sporules and filaments in the mucus instead of the vibriones which are present in that of the healthy stomach. He abstains, however, from drawing any farther inference from these observations; and we shall follow him in this prudent reserve. We have not yet sufficient evidence of the constancy of these peculiarities: we doubt whether they are to be regarded as causes rather than effects of this disease; yet we could not omit all mention of them, as they may possibly hereafter be made subservient to the farther elucidation of its nature. M. Bernard has recently stated, that by puncturing the floor of the fourth ventricle of the brain (near the origin of the eighth pair of nerves) the urine of rabbits is rendered saccharine; and M. Reynoso asserts, that in impeded respiration also it becomes saccharine.

We have spoken of sugar as the characteristic constituent of diabetic urine: Lehman appears to have been the first to point out the occasional existence of hippuric acid in it. Blood, albumen, and caseous matter are not unfrequently met with, albumen especially at the commencement and termination of the disease. An excess of uric acid is often met with. The quantity of urea excreted there seems reason to believe is generally diminished both relatively and absolutely; but in Mr. M‘Gregor's cases the reverse was the case, the whole daily secretion of urea exceeding the average of health. The amount of this ingredient, as of others also, is probably much influenced by the quality of the food.

In some instances the quantity of urine is much greater than can be accounted for from all the ordinary sources of supply. Cases are recorded in which from twenty-five to thirty pints were discharged in the space of a natural day for many successive weeks, and even months, and in which the whole ingesta, as was said, did not amount to half the weight of the urine. To account for this overplus it has been alleged that water is absorbed from the air by the surface of the body, as also that an extraordinary quantity of water is compounded in the lungs themselves.

Diabetes sometimes comes on slowly and imperceptibly without any previous disorder; and it now and then arises to a considerable degree, and subsists long without being accompanied with evident disorder in any particular part of the system: the great thirst, which always, and the voracious appetite which frequently, occurs in it, being often the only remarkable symptoms. But it now and then happens, that a considerable affection of the stomach precedes the coming on of the disease; and that in its progress, besides the symptoms already mentioned, there is a great dryness of the skin, with a sense of weight in the kidneys, and a pain in the ureters and the other urinary passages. The temperature of the body is usually below the standard of health. The spirits are depressed, the disposition is equally indifferent to study or amusement, and there is evidently a decline of mental energy, with a loss of the power of virility. Ulceration of the tongue and gums are of frequent occurrence in diabetes, owing probably to the derangement of the digestive functions. Some morbid change in the alvine excretion always accompanies the diabetic habit, and costiveness is perhaps the most common of these; for in some instances the bowels have been so remarkably torpid, that even the most powerful medicines, in large doses, produced but a trifling effect. Very frequently, some degree of inflammation and swelling about the external orifice of the urethra is to be observed.*

The average quantity of the urine daily discharged may be stated at twelve or fifteen pints; and the secretion of so much urine is necessarily attended with a frequent desire to pass it, compelling the patient to rise several times during the night for this purpose.

It has been remarked, that diabetes is often preceded or accompanied with a pulmonic affection; and we are told by Dr. Bardsley†, that he does not recollect an instance of the disease which was not attended with some affection of the chest.

Under a long continuance of the disease, the patient becomes much emaciated, the feet œdematous; great debility arises, and an obscure fever, with all the appearances of hectic, prevails. In point of number, the pulse is very much diversified; in most cases it is quicker than natural, but sometimes it is below the common standard; but, whether it be quick or slow, it is generally such as to denote great debility in the system. In some cases, vision becomes very indistinct, and the patient is troubled with vertigo.

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* See Cases of Diabetes, by R. Watt, p. 159.

† See his Medical Reports.

Patients suffering under severe forms of this disease for the most part die of pulmonary consumption, either accompanying or supervening upon it, of coma, or of gradual exhaustion. The first is by far the most common manner in which diabetes terminates. In other cases, where the formation of sugar is not excessive, life may be protracted for many years, during which the sufferer enjoys his health in a moderate degree; while in some rare instances the morbid action has been entirely overcome. Thus, Andral, at page 869. of the translation of his Clinique Medicale, mentions a case of chronic gastritis accompanied by diabetes, in which the latter disease was removed, together with the former, by leeches and counter irritation, and milk diet continued for three months. Numerous reputed recoveries are without doubt upon record; but we do not hesitate to express our belief that in some of these the cure was apparent rather than real, the disease mitigated rather than eradicated.

The duration of diabetes is variable. It has been known to run its course and prove fatal in five or six weeks, and in some instances to last for several years, ultimately wearing out the constitution.

Dissections of diabetes have usually shown the kidneys to be much affected. In some instances they have been found in a loose flabby state, much enlarged in size, and of a pale ash colour; in others they have been discovered much more vascular than in a healthy state, approaching a good deal to what takes place in inflammation, and containing in their infundibula a quantity of whitish fluid, somewhat resembling pus, but without any sign of ulceration whatever. At the same time that these appearances have been observed in their interior, the superficial veins on their surface were found to be much fuller of blood than usual, forming a most beautiful net-work of vessels, the larger branches of which exhibited an absorbent appearance. In many cases of dissection the whole of the mesentery has been discovered to be much diseased, and its glands remarkably enlarged; some of them being very hard, and of an irregular texture; others softer, and of a uniform spherical shape. Many of the lacteals have likewise been seen considerably enlarged. The lungs are not unfrequently found diseased. The liver, pancreas, spleen, and stomach, are in general perceived to be in a natural state; when they are not so, the occurrence is to be considered as accidental. The bladder is now and then found to contain a quantity of muddy urine; in some cases its coats are much thickened, and loaded with a gelatinous substance, and its size less than natural.

General opinion, however, in the present day tends to the belief that these changes observed in the kidneys are accidental concomitants, or consequences, rather than causes of the disease.

Dr. Percy has furnished the public with the results obtained by microscopical examination of the stomach of a diabetic patient by Messrs. Bowman, Goodsir, and Busk. These gentlemen made their observations separately and independently, but agreed in the conclusion that no important structural change could be detected. Mr. Busk found the same healthy appearance in a second diabetic stomach; but he remarked in the mucous secretions in both cases those abnormal phenomena which have been mentioned above. Dr. Percy, from a careful examination of numerous published cases, arrives at the negative conclusion, that the disease may exist independently of any appreciable alteration of structure whatever.

A diminution in the quantity of urine secreted, with a decrease in its specific gravity, and in the proportion of sugar contained in it, are favourable symptoms.

But it is to be remarked, that it is very common to obtain by means of treatment some even considerable improvement in these respects; to advance to a certain point, but to find our efforts at farther progress baffled, and even to lose ground again at times. It is a great gain if we can permanently secure the advantage which we have obtained; especially if the disease have been so far mitigated in degree that the patient's flesh and strength are no longer wasting under it. It has been correctly stated by Dr. Elam as a customary event for the quantity of the urine and its specific gravity to decrease together. He mentions one case in which twenty-five pints of water were passed in twenty-four hours, the density was 1·052, but when fourteen were voided it was only 1·034. This double gain is important, as tending to bring the drain from the disease more surely and speedily within the tolerance of the system; but experience has taught us that this rapidity of our early progress is no guarantee of final success. This can only be considered as attained when, without the accession of any other disease, the saccharine condition of the urine shall have permanently disappeared; and our progress towards this point must be sensible, though interrupted, in order to justify any sanguine expectation of a satisfactory result.

Other favourable symptoms are,—

Great abatement of the thirst, and of the extraordinary desire for food, the skin becoming soft to the touch and perspirable, the bowels more lax or regular, the dyspeptic affection being much diminished, and the bodily strength somewhat recruited, together with a return of mental energy.

Dr. G. O. Rees says, in his lecture before quoted, that "it would appear from what he had stated of the pathology of diabetes that the treatment ought to be directed towards improving the condition of the stomach." Yet he at once confesses that "we are mere empiries in the treatment of this disease; that we have no principles to guide us in the attainment of our object; and that our medicines for alleviation or cure are such as have been derived from experience alone." We fully concur in these remarks, and proceed to detail such remedial means as have seemed beneficial in our own practice, or been found so by others, without pretending to explain the principles on which they act, or observing any fixed order in the detail of them.

Blood-letting has been tried in this as in most other diseases, and seems not likely to be injurious, and at times to have been very beneficial.

Several cases of diabetes which were treated successfully by an antiphlogistic regimen, and very copious depletion by venesection, employed under the most unpromising circumstances, — such as a feeble low pulse, loss of strength and spirit, cold and œdematous extremities, &c. — are recorded by a late writer*; and they seem in some measure to support the opinion, that an inflammatory action does really take place in those labouring under this disease.

A case is also recorded in one of the numbers of a periodical work†, which was treated by venesection frequently repeated, in an elderly man of seventy-two, with success.

There is a paper in the fifth volume of the Medical Transactions of the London College of Physicians, giving a detail of several cases of diabetes which were successfully treated by the late Dr. Satterley, and which illustrate in a very satisfactory manner the advantages to be derived from a judicious employment of the lancet, as proposed by Dr. Watt. In the first, in particular, the symptoms were strongly marked, and the progressive beneficial effects of the successive bleedings so evident as to induce the patient to desire a more frequent repetition of the remedy than was deemed prudent.

In all the cases the first-drawn blood had the appearance of a homogeneous black mass, possessing no firmness, but resembling treacle, and not separating by rest into serum and crassamentum. After each bleeding, however, it became firmer and more natural in appearance; and in the first of the cases, after the fourth venesection, the crassamentum was covered with a membrane analogous to the buffy coat, but of an intense bright scarlet colour. The quantity of saccharine matter also yielded by each quart of water was found to diminish in proportion as the urine itself was diminished; but even when it was reduced to two quarts daily, sugar was found in it. At seven different times, from February the 19th to March the 11th, one hundred and twenty-six ounces of blood were drawn in this case from the arm, with great and almost uninterrupted mitigation of the symptoms, terminating in a perfect recovery.

More recently, Dr. Craigie, at page 1165. of the second volume of his Practice of Physic, speaks of blood-letting as most likely to make a salutary and effectual impression on the disease, and says that it should be carried to such extent, both in amount and by repetition, as to change the appearance of the blood, and moderate sensibly the symptoms of the disease. Dr. Prout, too, in the 4th edition of his work, says, that in cases of recent occurrence, and of an acute character, there cannot be a doubt about the propriety, and even necessity, of general blood-letting. He adds, that in most cases, also, frequent local bleedings from the epigastric region have been found beneficial.

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* See Cases of Diabetes, by Dr. Robert Watt, of Glasgow.

† See No. 29. of the Edinburgh Medical and Surgical Journal.

Notwithstanding, however, these examples and high authorities, we doubt whether the practice of blood-letting has gained ground of late years.

There is a general agreement of opinion as to the propriety of regulating the bowels, which are apt to be constipated. This is to be attempted only by the gentlest means—as by a compound rhubarb or colocynth pill, or by a little infusion or confection of senna or castor oil,—severe purging being studiously avoided. With the view of securing a sufficient action of the bowels, Dr. Prout recommends brown bread, or that made from flour having more than its natural proportion of bran, as part of the diet: he condemns the saline aperients in general, on account of their diuretic properties, but makes an exception in favour of phosphate of soda.

One indication commonly insisted on is to restore a healthy condition and action of the skin. Success, however, in the production of a perspiring state of this organ is by no means uniformly attended with marked improvement in other respects. We need hardly say how much more the returning moisture of the surface justifies a favourable prognosis when it occurs as a consequence of amendment in the essence of the disease, than when it is a mere effect of baths and diaphoretics. In our ignorance, however, of the means of attacking the disorder in its proper seat, this is an indication not to be neglected.

This has been attempted by a use of remedies which open the pores,—such as emetics exhibited occasionally, diaphoretics, the vapour or a warm-bath of about 96 or 98 degrees of heat, the employment of the flesh-brush, and moderate exercise, additional clothing, or the removal to a warm climate. As diaphoretics, the pulvis ipecac. compos. or antimonialis, combined with opium and camphor, have principally been employed.

The use of alkalies has found some advocates. M. Mialhe, in accordance with his theory, contends that a sudorific and alkaline treatment is alone suited to master the evil. Mr. Horne speaks of soda and quinine given daily for weeks together, as the most satisfactory treatment of diabetes. Dr. Barlow has proposed the employment of ammonia in the form of the sesquicarbonate, not indeed for the sake of its alkaline properties, but on account of the large amount of azote which it contains. The fixed alkalies, potass and soda, and their carbonates, seem objectionable, from their tendency to increase the action of the kidneys; but the alkaline earths, lime and magnesia, or their carbonates, enjoy some reputation. Dr. G. O. Rees, after remarking that large doses of ammonia have been used with good effects, adds that he has no reason to consider it equal to magnesia as a remedy. Dr. Trotter long ago extolled magnesia, given to the extent of two drachms daily, as a valuable medicine in diabetes; and as having alone effected some cures. The doses here stated appear to us unnecessarily and injuriously large. Dr. Prout speaks favourably of waters containing lime or magnesia, held in solution by carbonic acid, as calculated to relieve thirst.

The Bristol hot-well waters, when drank at the fountain-head, have long been celebrated for their good effects in this disease, and have by many been looked on as a kind of specific: they may therefore be resorted to, if the situation and circumstances of the patient will admit of it; but if not, he must be content to substitute lime-water, which may be taken in the quantity of a pint or quart a-day, mixed with an equal proportion of milk. By dissolving about half an ounce of gum acacia in each pint of milk, some further advantages may possibly be derived.

Dr. Rollo at first was in the habit of using the potassæ sulphuretum, but was induced to substitute the hepatised ammonia, under the supposition that the alkali of the former had an improper effect on the kidneys. Hepatised ammonia, it may be observed, is, however, both a nauseating and debilitating medicine, and has been considered by some[1] physicians as more likely to do harm than good.

Dr. Chalmers, of Hull, has published, in the fourth volume of the Medical Gazette, an account of a patient in whom the daily secretion of urine was diminished in the course of two months from twenty to only seven pints; the specific gravities are not recorded. In this instance, at first five, and soon afterwards seven, drops of hydrosulphuret of ammonia were given in an ounce of distilled water three times a-day. Warm baths and aperients were also occasionally resorted to.

Dr. Hobson, of Leeds, in the third volume of the Medical Gazette, details the particulars of a case of diabetes treated successfully by the exhibition of from one to two ounces of Labarraque's solution of chloride of soda, taken in Holbeck water in the course of each day. We find, however, that opium was simultaneously administered.

The astringents which have been most used are, alum, zinci sulphas, gum kino, and catechu, and uva ursi; but the first and second seem to be the most efficacious, and may be combined together as below*, or be given separately. The tonics generally employed are the different preparations of cinchona with the mineral acids, sulphate of quinine, myrrh, ferri subcarbonas, and other chalybeates, as advised under the head of Dyspepsia. To

[1] See Appendix to the Modern Practice of Physic, p. 1025., 8th edition, published at New York.

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* ℞ Aluminis, gr. xij.
Zinc. Sulphat. gr. ij.
Opii, gr. ss.
Confect. Rosæ, q. s.
Ft. bolus, ter quaterve die sumendus.

* Take Alum, twelve grains.
Sulphate of Zinc, two grains.
Opium, half a grain.
Confection of Roses, a sufficiency to form a bolus, to be taken three or four times a-day.

these we may add the joint use of opium. For ourselves we must profess our want of faith in the suitableness of astringents as distinguished from tonics to the treatment of this malady; and we attribute their introduction to an erroneous view of its nature and seat.

For the purpose of restoring vigour and due energy to the system when the diabetic tendency has been checked, nothing perhaps would be better than iron combined with phosphoric or sulphuric acid, as it is found in the phosphate or sulphate of that mineral; and when a purgative is required, soda phosphorata should always be preferred. Dr. Latham, in his treatise on this disease, reports, that he has seen this plan very beneficially employed, but more particularly in chronic diabetes. In cases of excessive discharges of urine, there can be no doubt of the efficacy of the phosphate of iron, as under the use of it the quantity of urine is rapidly reduced, and its qualities sensibly altered; moreover, the powers of digestion are increased and invigorated, and the bulimia (which is a usual attendant) is diminished.

Administering large doses of opium has occasionally been found highly useful in this disease. Some cases recorded in the fourth volume of the Medical Transactions of the London College of Physicians, by Dr. Warren, clearly show the very great influence which opium is capable of exerting over the morbid secretion of the kidneys in this disorder, and point it out as a remedy worthy of attention in addition to animal regimen. "Of sedatives," says Dr. Prout, "opium claims the first place; and in acute cases, after the more urgent symptoms have been subdued by bleeding or purgatives, and in almost all chronic cases, opium, either alone or in the form of Dover's Powder, is one of the most useful remedies we possess." "I cannot help observing at the same time," he subsequently adds, "that those who have announced it as a cure of the disease have much overrated its powers." Our own reading and experience would lead us to the conclusion that there is no single medicine so much and so generally to be relied upon for controlling this disease as opium; and we are happy in being able to adduce the authority of Dr. Budd, of King's College, to the same purport. "The effects of opiates," he says, in a lecture published in the 32nd volume of the Medical Gazette, page 167., "in mitigating the symptoms of diabetes is still more striking. They are beneficial in every stage of the malady, and happily are not incompatible with any of the other means that have been found of service. They should, therefore, form a part of every plan of treatment."

Besides the medicines already spoken of, a number of others have been employed. Indeed, to use the words of Dr. Prout, it has been the fashion to try at random new remedies, especially if potent. Creasote and nitrate of silver appear to have some evidence in their favour; others are hydrocyanic acid, colchicum, strychnine, iodide of potassium, and iodide of iron. The mere mention of so many and various remedies seems to justify the generally unfavourable prognosis that we have given of this disease.

If counter irritation is to be employed either to the pit of the stomach or the loins, after leeches and cupping have done all that can be required of them, it will be only prudent we think to avoid blisters; and to use instead either the ointment of tartar emetic, or croton oil or tincture of iodine, or some stimulant free from the risk of acting prejudicially on the kidneys. We confess, however, that we have never submitted any of these means to a trial.

One of the most important points to be considered in the treatment of diabetes, is the regulation of the diet of the patient. As regards drinks it seems established, that, whatever their kind, their quantity should as much as possible be limited; since the simplest that are generally used as diluents, if used in excess, are found to be diluents no longer, but to increase not only the bulk of urine excreted, but its specific gravity also; thus proving doubly injurious. For allaying the thirst with a diminished quantity of fluid, it will be well to pay attention not only to the nature of the beverage, but to the manner of drinking it. Much advantage will result if the patient be advised to sip at frequent intervals, rather than indulge in large draughts at any time. Dr. Prout considers that even washing out the mouth with waters containing fixed alkalies, and saturated with carbonic acid, often removes or mitigates thirst. He advises, moreover, that the quantity of liquids allowed should be gradually diminished; and that thay should be taken in a tepid state. Besides the drinks which have been mentioned in a former part of this article, water, pleasantly flavoured with either of the mineral acids—as the hydrochloric, the nitrates, or the phosphoric, —may at times be employed in their stead. There is one principle we think not always sufficiently attended to, and that is, that the stomach loathes monotony; and that a change of medicine and variation of the diet tends to good. We have seen this in diabetes. The stomach will not long tolerate nothing but milk and lime water, or broths, and soups, and insipid drinks; and the mineral acids afford the means of making a palatable and refreshing substitute, whose use may alternate with that of the others. Of fermented liquors, sound porter is the least objectionable, on account of its freedom from unfermented saccharine matters; and on the same ground, well-made bitter beer is to be preferred to ale; but either of these is to be taken only in very moderate quantities, regulated, of course, by the state of the patient.

Sugar in all its forms must be absolutely forbidden: even fruits, whether subacid or sweet, as well as every compound, natural or artificial, into which sugar enters must be strictly abstained from. With regard to matters convertible into sugar — as the fecula or starch contained in plants or corn,—modern writers insist upon a less rigid discipline than that which Dr. Rollo proposed; and others have endeavoured to carry it out. That the partial prevention of the production of sugar by the abstraction of the materials from which it is principally formed is attended with considerable benefit, is generally admitted in the present day; yet at the same time it is also believed, that the morbid action which exists in diabetes is such as is not likely to be destroyed by this forced interruption: it is not a habit to be broken; it may be long almost dormant for want of the means of manifesting itself, and yet will re-appear in all its energy as soon as the opportunity arises. Hence this part of the treatment, as indeed all the rest, must be considered palliative rather than curative in character. A complete confinement to articles of animal origin for food has been found so intolerable to the sufferers as to be in truth impracticable. It is well known that they disregard both truth and honesty in order to gratify their cravings. Now these strong instinctive feelings are an argument against the plan proposed. It has been found, besides, that a careful selection of the kind, and a limitation of the quantity of the vegetable matters allowed, have most of the advantages of their total exclusion without its inconveniences. On this subject Dr. G. O. Rees writes in 1845. As regards the diet best suited to this form of disease, it appears any thing but reasonable to subject the stomach to the severe discipline which has been applied by the fashion of the day in prohibiting the use of vegetable food and restricting the patient to a purely animal diet. He goes on to say that several cases which he has seen to do best, have not been so restricted as regards vegetable aliment, but have been fed upon a wholesome mixed, but restricted, diet. Dr. Prout lays it down as a general rule with respect to diet, that a quantity, greater or less according to circumstances, should be taken at periods of four, five, or six hours; and that, speaking generally, mutton or beef plainly cooked, and particularly mutton chops or beef steaks rarely done, should be taken twice in the twenty-four hours; and that the other meals should consist of any simple article that can be prepared from farinaceous matters with milk, eggs, &c. only. Care should at all times be taken to avoid overloading the stomach, which is as much injured by excessive as by misdirected efforts. We would rather follow the instincts of nature in drinking moderately with our meals than observe the precepts of Abernethy or Prout to abstain from all fluids at the time of, and for an hour or two after, taking solid food. Of farinaceous matters, the last author tells us that the high or strong — as the farina of wheat in the shape of unfermented bread or biscuits — appear to be the most easily assimilated. Other farinaceous matters — as arrow root, potatoes, &c. (with the exception perhaps of rice) — should be avoided. It is well known that a particular kind of bread, though bread it is scarcely to be called, has been manufactured expressly for the sufferers from this disease. This has been called gluten bread, and is made of flour deprived of the whole or of the greater part of its starch, and contains therefore no ingredient, or scarcely any, which is prone to conversion into sugar. This may be advantageously employed, if it prove not unpalatable; but in truth the samples we have seen have not been very tempting, as judged of by the eye or taste; so that in many cases biscuit or unfermented bread in moderate quantities is to be preferred. There is no sufficient ground we believe for excluding so completely as has been customary the use of green vegetables well boiled, either in this or other forms of dyspepsia.

It must be remembered after all, that the rules of medicine are not absolute and inflexible, and that a greater licence may be allowed in some cases, according to peculiarity of individual constitution or condition than is admissible in others; but this adaptation to particular circumstances must be left to the judgment of the medical attendant.

If we were called upon to sum up all that we have said concerning the treatment of this intractable disease, we should point to bleeding, general or local, in the early stages, and wherever it was indicated or admissible; to the exhibition of opium not carried to extreme doses, but interrupted for a time, and then recurred to; and to the administration of the different preparations of iron, alternated with that of ammonia in vegetable bitters, together with the use of warm clothing, and occasionally of warm baths; the regulation of the bowels, the use of such varied drinks as we have named, and the selection of the diet upon the principles above pointed out, as the means in which we have most confidence.

END OF THE FIRST VOLUME.

London:
Spottiswoodes and Shaw,
New-street-Square.